The
George Washington University

FACULTY OF MEDICINE

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Announce. 1905-6

1821

UNIVERSITY OF ILLINOIS
SEP 2 1915
PRESIDENT'S OFFICE

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March, 1905

THE
GEORGE WASHINGTON UNIVERSITY
(FORMERLY COLUMBIAN)

FACULTY OF MEDICINE

ANNOUNCEMENTS
1905-1906

CATALOGUE
1904-1905

1821

Reprinted from the University Bulletin,
Catalogue Number, March, 1905

1905.

JANUARY.

S.	M.	T.	W.	T.	F.	S.
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FEBRUARY.

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1906.

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JUNE.

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1905/06 - 1909/10

The George Washington University.

CALENDAR.

PROFESSIONAL DEPARTMENTS.

1905.

Feb. 22, Wednesday.—Winter Convocation.

March 4, *Saturday.*—Inauguration Day ; a holiday.

April 8, *Saturday.*—Annual Meeting of the Alumni Association.

April 21–24, *Friday* to *Monday*, both inclusive.—Easter holidays.

May 10, *Wednesday.*—Examinations for Degrees completed.

May 28, *Sunday.*—Baccalaureate Sermon.

May 29, *Monday.*—Commencement of the Departments of Medicine and Dentistry.

May 30, *Tuesday.*—Commencement of the Departments of Law, Jurisprudence and Diplomacy.

June 5–9, *Monday* to *Friday.*—Examinations for admission to Department of Medicine.

SUMMER VACATION.

Sept. 20, *Wednesday.*—Fall Examinations in the Department of Medicine for conditioned students.

Sept. 22–26, *Friday* to *Monday.*—Examinations for admission to the Departments of Medicine and Law.

Sept. 27, *Wednesday.*—Academic Year begins in all Departments of the University.

Nov. 23–25, *Thursday* to *Saturday*, both inclusive.—Thanksgiving recess.

RECESS FROM DECEMBER 23, 1905, to JANUARY 2, 1906, BOTH INCLUSIVE.

1906.

Jan. 20, *Saturday.*—Annual Meeting of the Alumni Association.

Feb. 1, *Thursday.*—Second Term begins.

Feb. 22, *Thursday.*—Winter Convocation.

April 13–16, *Friday* to *Monday*, both inclusive.—Easter holidays.

May 16, *Wednesday*.—Examinations for Degrees completed.

June 3, *Sunday.*—Baccalaureate Sermon.

June 1–5, *Friday* to *Tuesday.*—Examinations for admission to the Department of Medicine.

June 6, *Wednesday.*—University Commencement.

CHRONOLOGICAL TABLE.

1799. George Washington's last will and testament, urging the establishment of a University in Washington.

1821. Charter granted by Act of Congress creating "The Columbian College in the District of Columbia," and founding of the College.

1825. The Medical School organized.

1865. The Law School organized.

1866. Mr. W. W. Corcoran gave the Medical School a building, 1325 H street.

1872. Mr. Corcoran gave $100,000 "to make the College an University."

1873. Act of Congress changing the name to the Columbian University.

1884. University building, Fifteenth and H streets occupied by various departments of the University.

1884. The Corcoran Scientific School organized.

1887. The Dental School organized.

1893. The School of Graduate Studies organized.

1898. The Department of Jurisprudence and Diplomacy organized.

1898. Incorporation of the George Washington Memorial Association.

1902. Merging of the College, the Corcoran Scientific School, and the School of Graduate Studies into one Department of Arts and Sciences.

1902. Purchase of Van Ness Park as new site for the University.

1903. Conference between representatives of the Washington Memorial Institution, the George Washington Memorial Association, and the Columbian University with a view to coöperation in graduate work.

1904. January 23. Act of Congress making the University non-sectarian and giving the Board of Trustees power to change the name.

1904. Suggestion of the George Washington Memorial Association that Columbian University change its name to The George Washington University, and its offer to erect a memorial building for graduate study and scientific research at a cost of $500,000 on the new site, accepted by the Board of Trustees.

1904. September 1. Change of name to The George Washington University.

1905. February 22. First Winter Convocation of The George Washington University.

1905. Act of Congress authorizing the incorporation of colleges under the University charter.

1905. Organization of the Columbian College under the University charter and under the same auspices and control extended over it through all of its history.

GOVERNING BOARD.

CHARLES WILLIS NEEDHAM, LL.D.,
President of the University and *ex Officio* Member of the Board.

Trustees Whose Term Expires in 1905.

HENRY KIRKE PORTER, LL.D.
JOHN B. LARNER, LL.D.
JACOB H. GALLINGER, A.M.
WAYNE MACVEAGH, LL.D.
FRANCIS G. NEWLANDS, LL.D.
HENRY B. F. MACFARLAND.
ALEXANDER GRAHAM BELL, LL.D.

Trustees Whose Term Expires in 1906.

MYRON M. PARKER, LL.B.
THEODORE W. NOYES, LL.M.
ANDREW J. MONTAGUE, LL.D.
WILLIAM S. SHALLENBERGER, A.M.
DAVID ABBOT CHAMBERS, A.M.
CHARLES D. WALCOTT, LL.D.
CHARLES WILLIAMSON RICHARDSON, M.D.

Trustees Whose Term Expires in 1907.

SAMUEL H. GREENE, D.D., LL.D.
SAMUEL W. WOODWARD.
EDWARD M. GALLAUDET, LL.D.
WILLIAM F. MATTINGLY, LL.D.
EUGENE LEVERING.
GEORGE O. MANNING.*
JOHN JOY EDSON, LL.B.

OFFICERS OF THE BOARD.

WAYNE MACVEAGH, LL.D., Chairman.
JOHN B. LARNER, LL.D., Secretary.
EDWARD M. GALLAUDET, LL.D., Vice-Chairman.
JOHN JOY EDSON, LL.B., Treasurer.
WILLIAM AUGUSTIN DE CAINDRY, Auditor.
CHARLES WENDELL HOLMES, Assistant Treasurer.

* Resigned January 11, 1905.

STANDING COMMITTEES OF THE BOARD OF TRUSTEES.

1905–1906.

Executive: WOODWARD, GREENE, MATTINGLY, LARNER, GALLAUDET, EDSON, WALCOTT, NEEDHAM.
Nominations: GREENE, WOODWARD, PORTER, GALLINGER, BELL.
Department of Arts and Sciences: NOYES, GALLAUDET, MACFARLAND.
Department of Medicine and Hospital: RICHARDSON, LARNER, EDSON.
Department of Dentistry: SHALLENBERGER, RICHARDSON, GALLINGER.
Department of Law and Jurisprudence: MATTINGLY, LARNER, MONTAGUE.
Department of Politics and Diplomacy: MACVEAGH, MATTINGLY, NEWLANDS.
Auditing Committee: CHAMBERS, PARKER, SHALLENBERGER.
Endowment: GALLAUDET, LEVERING, WOODWARD, GREENE, MACVEAGH, PARKER, NOYES, BELL, NEWLANDS, CHAMBERS, PORTER, GALLINGER, MACFARLAND.

OFFICERS OF ADMINISTRATION.

CHARLES W. NEEDHAM, LL.D.	President of the University
Otis D. Swett, B.S., LL.M	Registrar of the University

PRESIDENT'S COUNCIL.

CHARLES W. NEEDHAM, LL.D.	President of the University
James Howard Gore, Ph.D	Head Professsor of Mathematics
Howard Lincoln Hodgkins, Ph.D	Head Professor of Physics
James Macbride Sterrett, A.M., D.D.	Head Professor of Philosophy
Charles E. Monroe, Ph.D	Head Professor of Chemistry
Hermann Schoenfeld, Ph.D., LL.D	Head Professor of German
Charles Clinton Swisher, Ph.D	Head Professor of History
William Allen Wilbur, A.M	Head Professor of English and Acting Dean of Columbian College
Mitchell Carroll, Ph.D	Head Professor Classical Philology
George N. Henning, A.M	Head Professor of Romance Languages
Percy Ash, C.E.	Head Professor in Charge of Division of Architecture
W. F. R. Phillips, M.D	Dean of the Faculty of Medicine
J. Hall Lewis, D.D.S	Dean of the Faculty of Dentistry
Henry St. George Tucker, LL.D	Dean of the Faculty of Law, Jurisprudence and Diplomacy

The George Washington University.

ORGANIZATION.

The George Washington University comprehends the following Departments:

- Department of Arts and Sciences, including
  - (*a*) Division of Graduate Studies.
  - (*b*) Columbian College.
  - (*c*) Division of Architecture.
- Department of Medicine:
  - (*a*) Faculty of Medicine.
  - (*b*) Faculty of Dentistry.
- Department of Law and Jurisprudence.
- Department of Politics and Diplomacy.

UNIVERSITY BUILDINGS.

The Administration building is University Hall, at the corner of Fifteenth and H streets, N. W., in which the exercises of the Department of Arts and Sciences are held. The Department of Medicine buildings are on H street between Thirteenth and Fourteenth streets, N. W. The Departments of Law and Jurisprudence, and of Politics and Diplomacy conduct classes in Law Lecture Hall, situated on H street, adjoining University Hall.

THE UNIVERSITY ASSEMBLY.

The University Assembly meets regularly on Wednesdays throughout the session at 12 o'clock. Members of the faculties and students of all departments are expected to be present. The exercises are regularly presided over by the President. Religious services are held, official announcements are made, and an address is given by the President.

THE UNIVERSITY LIBRARY.

The University Library comprehends (1) the Library of the Department of Arts and Sciences, (2) the Law Library, and (3) the Library of the Department of Medicine. It is in charge of the Library Committee, composed of professors in the various departments who administer the expenditure of the annual appropriation for the purchase of new books and look after the general interests of the Library.

ANNUAL COMMENCEMENT AND WINTER CONVOCATION.

The Annual Commencement is held on the first Wednesday in June. The Winter Convocation is held on the 22d of February. Degrees are publicly conferred on Commencement Day and at the Winter Convocation. Members of the faculties and candidates for degrees are expected to appear in academic caps and gowns. Prizes for special excellence in any department are publicly delivered on Commencement Day.

PRIVILEGES IN GOVERNMENTAL INSTITUTIONS OPEN TO UNIVERSITY STUDENTS.

In order to promote research and the diffusion of knowledge, the Congress of the United States has made the scientific resources of the Government accessible to students under the terms of the following joint resolution, approved April 12, 1892:

"*Resolved by the Senate and House of Representatives of the United States of America in Congress assembled*, That the facilities for research and illustration in the following and any other governmental collections now existing or hereafter to be established in the city of Washington for the promotion of knowledge shall be accessible, under such rules and restrictions as the officers in charge of each collection may prescribe, subject to such authority as is now or may hereafter be permitted by law, to the scientific investigators and to students of any institution of higher education now incorporated or hereafter to be incorporated under the laws of Congress or of the District of Columbia, to wit:

1. Of the Library of Congress.
2. Of the National Museum.
3. Of the Patent Office.
4. Of the Bureau of Education.
5. Of the Bureau of Ethnology.
6. Of the Army Medical Museum.
7. Of the Department of Agriculture.
8. Of the Fish Commission.
9. Of the Botanic Gardens.
10. Of the Coast and Geodetic Survey.
11. Of the Geological Survey.
12. Of the Naval Observatory."

Libraries.—In the archives of the State and other Departments and in the statistical bureaus of these Departments are extensive accumulations of original historical documents and data which are invaluable to graduate students in history, political science, economics, sociology, and the allied topics of research. The Library of Congress, the Public Library of the District of Columbia, and the many highly specialized libraries attached to the various Departments of the Government are made easily accessible. Herbert Putnam, LL.D., Librarian of Congress, has said of them :

> "There are thus in the city of Washington *thirty-four* governmental libraries freely available for research. These libraries now contain in the aggregate over two million books and pamphlets and over a half million other articles literary in character—manuscripts, maps, music, and prints. If we add to them the contents of the District Library and of the libraries of private associations and institutions * * * we shall have a total not merely greater than is to be found in any other city of this size in the world, but one which in proportion to population represents several times as many volumes *per capita* as exist for public use in *any* other city of the world. * * * Today the Library of Congress is a collection, including duplicates, of over 1,100,000 books and pamphlets and nearly half a million other articles. It is housed in a building devoted to its sole use—the largest library building in the world, the most commodious, the most efficient in equipment for the work which it has to do ; a building which provides for ample classification and display of the material, for reasonable growth, and for a multitude and great variety of service ; a building which may accommodate a thousand readers at a time and differentiate them to their best advantage."

Museums.—In the collections of the National Museum, the Smithsonian Institution, the Army Medical Museum, the Museum of Naval Hygiene, and the departmental museums are found extensive series of specimens of great value to the student of anthropology, archæology, mineralogy, geology, paleontology, biology in all its branches, and other sciences. In the Patent Office are the records of the many inventions that have contributed so materially during our national existence to modify the conditions under which we live. The Army Medical Museum, which is open for inspection daily, presents a field for study superior to any other institution of the kind, either in this country or in Europe. Its library of medical books and periodicals is the best in the world. It has an unrivaled collection of anatomical and pathological specimens, illustrating normal anatomy and the results of disease in every form, and an almost unlimited number of other preparations showing the effect of gunshot wounds and surgical injuries of every kind. It also contains almost numberless crania of every human nationality. In the National Museum is found the most complete and best arranged collection of Materia Medica in the world. The drugs are shown in all their processes of manufacture, from the original package to the delicate alkaloid constituting the active principle.

Laboratories.—In the experimental sciences the most notable facilities are available, since in Washington are centered the Weather Bureau, with its appliances for the study of national problems in meteorology; the Coast and Geodetic Survey, from which the surveys of our territory are carried on and by which the figure of the earth and terrestrial magnetism are experimentally determined; the Hydrographic Bureau, which conducts the surveys of foreign coasts and the study of the oceans; the Bureau of Standards, which standardizes the instruments used in measuring mass, volume, heat, light, electricity, and all other magnitudes; the Geological Survey, which investigates the structure of the earth, ascertains our mineral resources, and supervises the sources of supply and means for distribution and control of water for irrigation purposes; the Department of Agriculture, which exists primarily for conducting original investigations for the benefit of agriculture in all its branches, and is therefore provided with extensively equipped laboratories for the study of chemistry, botany, vegetable physiology, entomology, bio-chemistry, bacteriology, comparative pathology, parasitology, the physics and chemistry of the soil, forestry, and microscopy; the Naval Observatory and Nautical Almanac Office, where researches in astronomy and navigation are conducted; the Marine Hospital Service, which deals with national problems in hygiene; the Bureaus of Construction and of Steam Engineering of the Navy, having supervision over the designs and construction of our ships; the Bureau of Yards and Docks, having supervision over the engineering operations at our navy yards and naval stations ; the Bureau of Equipment, which is charged with the electrical installations for the Navy ; the United States Signal Corps, which has supervision over the electrical installations for the Army ; the Engineer Corps of the Army, which is charged with river and harbor improvements, and the Light-House Board, which controls the system for lighting our navigable waters.

Of chemical laboratories for conducting the tests of materials, and especially for research work, there are now eighteen attached to the different departments at Washington. An extensive new laboratory is being equipped for the Marine Hospital and Public Health Service. This is the national health department of the Government. In this laboratory and in the laboratories of the Department of Agriculture there are superior facilities for all kinds of bacteriological and chemical investigations, and for the study of bio-chemistry, comparative pathology, and parasitology. The new laboratories and hospitals of the Army and the Navy also offer many opportunities for instruction.

Washington offers exceptional opportunities for special or advanced work in Mechanical Engineering. The departments of the Government charged with designing are all located here. In the Bureaus of Steam Engineering and of Construction and Repair, and Ordnance, of the Navy, there is projected a large amount and extensive variety of heavy constructional work. Here is also located the United States Navy or Ordnance Gun Factory. The Ordnance Proving Station is but a few miles down the Potomac. Tours of inspection may be made to the large steel works and shipbuilding plants in Baltimore, and to the shipbuilding plant at Newport News.

Department of Medicine.

GENERAL STATEMENT.

The Department of Medicine of the George Washington University is, in the chronological order of its establishment, the seventeenth Medical School in the United States. The first course of lectures began in March, 1825. For many years the school was known as the National Medical College; subsequently as the Department of Medicine of the Columbian University. By virtue of an Act of Congress, approved January 23, 1904, the Columbian University changed its name to "The George Washington University."

When first established, and for many years subsequent, this school, like most others in this country, gave only a two years' course of five months each. In 1878 the course was lengthened by the establishment of a Spring Session, devoted to lectures in certain special subjects. In 1879 the course was lengthened to seven months and attendance upon three annual sessions required; in 1893 attendance upon four regular courses was made obligatory upon all candidates for the degree of Doctor of Medicine. The present course of instruction for the degree of Doctor of Medicine extends through four years of eight months each. In order to increase the facilities for actual bedside teaching, the University Hospital was established in 1898 and made a part of the Department of Medicine. In 1902 the old building, in which the exercises were held since 1867, gave place to the present enlarged and commodious building.

The academic year begins on the last Wednesday in September and ends on the first Wednesday in June. The next session, the eighty-fifth, will begin September 27, 1905, and will end June 6, 1906. Students must register their names promptly at the Registrar's office at the beginning of the session, in order that their time of study shall count as a full year. Examinations are held at the conclusion of the instruction in each subject; examinations are written, oral, and practical, so far as the nature of the subjects permit. Degrees are conferred at Commencement, the first Wednesday in June, and at the Winter Convocation, February 22.

For catalogues and other information address either the Registrar of the University or the Dean of the Department of Medicine, The George Washington University, Washington, D. C.

FACULTY OF MEDICINE.

(Arranged, with the exception of the President and the Dean, in the several groups in order of collegiate seniority.)

*CHARLES W. NEEDHAM, LL.D.	President of the University
*William F. R. Phillips, M.D.	Dean, Professor of Hygiene and Assistant Professor of Practical Anatomy
*J. Ford Thompson, M.D.	Professor of Surgery
*Albert F. A. King, A.M., M.D., LL.D.	Professor of Obstetrics and Dean Emeritus of the Faculty
George N. Acker, A.M., M.D.	Professor of Pediatrics and of Clinical Medicine
Henry C. Yarrow, M.D.	Professor of Dermatology
*D. Kerfoot Shute, A.B., M.D.	Professor of Anatomy and of Clinical Ophthalmology
*William P. Carr, M.D.	Professor of Physiology and of Clinical Surgery
*Sterling Ruffin, M.D.	Professor of Theory and Practice of Medicine and of Clinical Medicine
William K. Butler, A.M., M.D.	Professor of Ophthalmology
Thomas E. McArdle, A.M., M.D.	Professor of Minor Surgery
John Van Rensselaer, A.B., M.D.	Professor of Clinical Surgery
*Charles Edward Munroe, Ph.D.	Professor of Chemistry and Toxicology
Charles W. Richardson, M.D.,	Professor of Laryngology and Otology
George Wythe Cook, M.D.	Professor of Clinical Medicine
*J. Wesley Bovée, M.D.	Professor of Gynecology
*Thomas A. Claytor, M.D.	Professor of Materia Medica and Therapeutics and of Clinical Medicine
A. R. Shands, M.D.	Professor of Orthopedic Surgery
*James Carroll, M.D.	Professor of Bacteriology and Pathology
Randolph B. Carmichael, M.D.	Professor of Clinical Dermatology
Francis P. Hagner, M.D.	Clinical Professor of Genito-Urinary Surgery and Venereal Diseases
John B. Nichols, M.D.	Professor of Histology
William C. Woodward, M.D., LL.M.	Professor of Medical Jurisprudence
Albert L. Staveley, M.D.	Clinical Professor of Gynecology
William A. White, M.D.	Professor of Mental Diseases
Francis P. Morgan, A.B., M.D.	Lecturer on Materia Medica
Edward E. Morse, M.D.	Assistant Professor of Obstetrics

* Indicates member of Executive Faculty.

Edward G. Seibert, M.D.	Assistant Professor of Chemistry
B. L. Hardin, M.D.	Lecturer on Physical Diagnosis
Julian M. Cabell, M.D.	Assistant Professor of Obstetrics
D. Webster Prentiss, M.D.	Assistant Professor of Histology
C. S. White, M.D.	Assistant Professor of Physiology
J. F. Mitchell, M.D.	Assistant Professor of Surgical Pathology
Joseph M. Heller, M.D.	Lecturer on Diseases of the Tropics
John R. Wellington, M.D.	Assistant Professor of Clinical Surgery

Samuel H. Greene, Jr., M.D.	Instructor in Anatomy
Homer S. Medford, M.D.	Instructor in Obstetrics
L. H. Reichelderfer, M.D.	Instructor in Medicine
Edgar P. Copeland, M.D.	Instructor in Surgery
J. L. Riggles, M.D.	Instructor in Anatomy
H. C. Macatee, M.D.	Instructor in Medicine and Clinical Instructor
G. Brown Miller, M.D.	Instructor in Gynecology
George M. Ruffin, M.D.	Instructor in Anatomy
Thomas M. Price, Ph.D.	Instructor in Bio-Chemistry
Eugene Le Merle, M.D.	Clinical Instructor in Nervous Diseases and Assistant Instructor in Bacteriology and Pathology
L. H. Taylor, M.D.	Instructor in Clinical Medicine
Henry R. Elliott, M.D.	Instructor in Physiology
Walter H. Merrill, M.D.	Instructor in Electro-Therapeutics
T. S. D. Grasty, M.D.	Instructor in Bacteriology and Pathology
H. H. Donnally, M.D.	Instructor in Bacteriology and Pathology
O. A. M. McKimmie, M.D.	Clinical Instructor in Laryngology and Ophthalmology
H. S. Dye, M.D.	Clinical Instructor in Laryngology and Ophthalmology

Virgil B. Jackson, M.D.	Assistant Demonstrator of Anatomy
Edward Elliott Richardson, M.D., M.S.	Assistant Demonstrator of Anatomy
W. A. Frankland, M.D.	Assistant Demonstrator of Anatomy and Assistant Instructor in Clinical Gynecology
R. M. Little, M.D.	Assistant Demonstrator of Anatomy
H. W. Lawson, M.D., B.S.	Assistant Demonstrator of Anatomy
Joseph D. Rogers, M.D.	Assistant Demonstrator of Anatomy
Thomas C. Holloway, M.D.	Assistant Instructor in Physiology
Henry M. Jewett, M.D.	Assistant Instructor in Histology
C. L. Davis, M.D.	Assistant Instructor in Histology
J. Lawn Thompson, M.D.	Assistant in Minor Surgery
Arthur Compton	Librarian
Thomas H. Legg	Librarian

UNIVERSITY HOSPITAL.

VISITING STAFF.

J. Ford Thompson, M.D.	Visiting Surgeon
W. P. Carr, M.D.	Visiting Surgeon
Sterling Ruffin, M.D.	Visiting Physician
Thomas A. Claytor, M.D	Visiting Physician
George N. Acker, M.D	Visiting Physician
A. F. A. King, A.M., M.D., LL.D	Visiting Obstetrician
Julian M. Cabell, M.D	Associate Visiting Obstetrician
E. E. Morse, M.D	Associate Visiting Obstetrician
Henry C. Yarrow, M.D	Visiting Dermatologist
D. Kerfoot Shute, M.D	Visiting Ophthalmologist
W. K. Butler, M.D	Associate Visiting Ophthalmologist
Charles W. Richardson, M.D	Visiting Laryngologist
J. Wesley Bovée, M.D	Visiting Gynecologist
James Carroll, M.D	Pathologist

OUT-PATIENT DEPARTMENT.

SURGICAL DISPENSARY.

A. R. Shands, M.D	Chief Surgeon
J. L. Riggles, M.D	Surgeon
R. S. Beale, M.D	Surgeon
T. S. D. Grasty, M.D	Surgeon
E. L. Mason, M.D	Surgeon

MEDICAL DISPENSARY.

B. L. Hardin, M.D	Chief Physician
E. P. Copeland, M.D	Physician
W. A. Frankland, M.D	Physician
S. H. Greene, Jr., M.D	Physician
H. C. Macatee, M.D	Physician
George M. Ruffin, M.D	Physician
Thomas Dowling, M.D	Physician

GYNECOLOGICAL DISPENSARY.

J. Wesley Bovée, M.D	Chief Gynecologist
G. Brown Miller, M.D	Gynecologist
A. B. Hooe, M.D	Gynecologist
V. B. Jackson, M.D	Gynecologist
D. W. Prentiss, M.D	Gynecologist

EAR, THROAT, AND NOSE DISPENSARY.

Charles W. Richardson, M.D	Chief Surgeon
E. G. Seibert, M.D	Surgeon
O. A. M. McKimmie, M.D	Surgeon

GENITO-URINARY DISPENSARY.

Francis R. Hagner, M.D.	Chief Surgeon
Henry R. Elliott, M.D.	Surgeon

EYE DISPENSARY.

D. Kerfoot Shute, M.D.	Chief Surgeon
E. G. Seibert, M.D.	Surgeon

SKIN DISEASE DISPENSARY.

Henry C. Yarrow, M.D.	Chief Surgeon
Randolph B. Carmichael, M.D.	Surgeon

ADMISSION.

Candidates for matriculation must show that they are fitted by previous education to study medicine. For this purpose they must present a satisfactory certificate of their attainments from an approved school or college, or they must pass an examination.

Beginning with the session of 1909–10, all candidates for matriculation will be required to present evidence of such proficiency in Theoretical and Inorganic Chemistry as will enable them to pursue the courses in Organic and Physiological Chemistry given in the Department of Medicine. Candidates unable to present such evidence must submit to an examination.

Candidates are admitted without examination:

(1) Upon presenting a diploma or certificate of a reputable college conferring on them the degree of A.B. or B.S., or an equivalent degree in the arts and sciences.

(2) Upon presenting a diploma or certificate of graduation from a high school, academy, or preparatory school approved by the University as maintaining an adequate standard.

(3) Upon presenting a certificate of admission to the freshman class of a reputable college.

(4) Upon presenting a medical student's certificate issued by a State board.

(5) Upon presenting a certificate of admission to another medical school approved by the University as maintaining an adequate standard.

Candidates unable to comply with the foregoing requirements are admitted upon passing an examination based upon the general requirement for admission to colleges, which is a four-year high-school course, or its equivalent, modified to meet the regulations of State Medical Boards. This examination comprises subjects selected from the annexed list equal to 15 units. For admission to the Department of Medicine eight (8) of the 15 units are required in the following subjects:

	Units.
English	3
Mathematics	3
Physics	1
Latin	1
Total	8

The other 7 units may be selected from the other subjects. A unit is considered the equivalent of one year's high-school work in a subject.

LIST OF SUBJECTS.

English:	Units.
(*a*) Grammar	1
(*b*) Rhetoric and Composition	1
(*c*) Literature—a knowledge of the form, subject-matter, and literary history of prescribed works is required	1

The following are the works prescribed for 1905-06: Burke's Speech on Conciliation, Macaulay's Essay on Addison, Macaulay's Essay on Milton, Milton's L'Allegro, Il Penseroso, Comus, and Lycidas; Shakespeare's Macbeth. Equivalent reading may be offered.

Latin:	Units.
(*a*) Elementary Grammar	1
(*b*) Cæsar's Commentaries, Books I–IV	1
Greek:	
(*a*) Elementary Grammar	1
(*b*) Xenophon or Homer	1
Modern Languages:	
(*a*) French, translation of easy prose	1
(*b*) German, translation of easy prose	1
History:	
United States	1
English	1
Roman	1
Greek	1
General	1
Mathematics:	
(*a*) Algebra through quadratics	1½
(*b*) Plane Geometry	1
(*c*) Plane Trigonometry	½
Sciences:	
Physics	1
Chemistry	1
Astronomy	½
Biology	1

	Units.
Geology	½
Botany	1
Physical Geography	½
Physiology	½

For the benefit of the candidate it may be stated that the scope of the different subjects is that comprised in standard high-school text-books.

Candidates may offer other subjects than those stated in the foregoing list of subjects, and if they are acceptable examinations will be arranged. A candidate may offer certificates of an approved school for work done in any of the foregoing subjects, and will be credited with the units represented by such work. A candidate failing to pass in two of the subjects of his examination may be admitted to the first year upon the condition that he make up the deficiency before entering the second-year class. The examinations are conducted by examiners appointed by the Superintendent of Schools of the District of Columbia.

As the laws relating to the preliminary educational qualifications required of students of medicine differ in many of the States of the Union, candidates are advised to make themselves familiar with the provisions of the medical statutes of the States in which they contemplate applying for license to practice. Attention to this precaution may save future embarrassment.

Examinations for admission to the first-year medical class will be held in Hall No. 2 of the Department of Medicine in June and in September.

The following is the schedule for both examinations:

June 5 and September 25, 10 a. m., English.
June 6 and September 22, 10 a. m., Mathematics.
June 7 and September 23, 10 a. m., Physics.
June 8 and September 22, 1 p. m., Latin.
*June 9 and September 26, 10 a. m., Electives.
*June 9 and September 26, 1 p. m., Electives.

ADMISSION OF STUDENTS FROM OTHER SCHOOLS.

Students of other recognized and approved medical schools may be admitted to this school as follows:

Those qualified to enter the second year of their own school may be admitted to the second-year class of this school; those qualified to enter the third year of their own school to the third

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* Subjects to be announced on first day.

year of this school, and those qualified to enter the fourth year of their own school to the fourth year of this school, provided, however, that the subjects pursued by the applicants in their previous year or years are reasonably equivalent to those required in the same year or years of this school, and that the requirements for advancement from class to class are the equivalent of those in this school. Applicants may be required to submit to examination in all the subjects pursued by the previous class of this school.

ADVANCED STANDING.

No advanced standing can be given for degrees of A.B. or B.S. or for degrees in Dentistry, Veterinary Medicine, or Pharmacy.

Students holding degrees in Arts, Science, or Philosophy, who in the course of study for their degrees have pursued studies in chemistry, physiology, anatomy, histology, bacteriology, or pathology, equivalent to the courses in these subjects in this school, may upon satisfactory evidence of their proficiency be credited with such work, provided an equivalent amount of work be taken in some other subjects to be approved by the Faculty.

SPECIAL STUDENTS.

Students, approved by the Dean, not candidates for the degree of Doctor of Medicine, may be admitted without examination to pursue any course they may elect. Such courses cannot, however, be subsequently considered as time spent in the course for the degree of Doctor of Medicine. Nor can such students enter upon the regular medical course without complying with all the regular requirements for admission.

WITHDRAWALS.

A certificate of work actually done will be given to any student wishing to withdraw or transfer to some other school during the session. Written notice of such withdrawal or transfer must be filed with the Dean at the time of requesting the certificate, and the student must have paid all fees and dues chargeable against him up to the end of the quarter in which he withdraws.

CLASSIFICATION OF STUDENTS.

Students are divided into four classes, according to their proficiency, and the time spent, viz., first year, second year, third year, and fourth year. Students cannot advance to a higher class unless they pass the examinations in the major subjects of the class in which they are registered, and they can be conditioned in not more than two minor subjects. Students failing in a major subject and not more than two minor subjects will be permitted at the fall examination in September a reëxamination in the subjects in which they fail. The Faculty may dismiss any student from the school, if in its judgment such student be deemed an unsuitable person, intellectually or otherwise, for the profession of medicine.

METHOD OF INSTRUCTION.

A change in the arrangement of the subjects of the curriculum goes into effect with the session of 1905–06. This change is made in order to secure a more logical correlation of the subjects, enabling the student to devote his time to better advantage.

A schedule showing in detail the hours of recitation, etc., is preparing and will be issued as soon as completed. The aggregate for the four years is not less than 4,000 hours.

The subjects studied in each year are shown in the following table :

First year.	Second year.	Third year.	Fourth year.
Histology.	Organic and Physiological Chemistry.	Practice.	Clinical Medicine.
Anatomy.	Bacteriology.	Surgery.	ClinicalObstetrics.
Physiology.	Pathology.	Obstetrics.	Clinical Surgery.
General Chemistry.	Materia Medica.	Therapeutics.	Laryngology.
	Hygiene.	Gynecology.	Otology.
	Clinical Microscopy.	Clinics.	Ophthalmology.
	Physical Diagnosis.		Dermatology.
			Psychiatry.
			Pediatrics.

The general order of study is as follows :

First year, first half. Histology, Anatomy, Lectures on General Chemistry.

First year, second half. General Chemistry, Physiology.

Second year, first half. Organic and Physiological Chemistry, Bacteriology.

Second year, second half. Pathology, Materia Medica and Pharmacology, Hygiene, Clinical Microscopy, Physical Diagnosis.

During the third year Therapeutics, Surgery, Obstetrics, Practice, and Gynecology are studied.

The greater part of the fourth year is devoted to clinical work in the hospitals. During this year, however, general instruction is also given in Mental Diseases, Dermatology, Ophthalmology, Laryngology, and Otology. Not less than 1,000 hours of clinical work is required.

OPTIONAL FIVE-YEAR COURSE.

Beginning with the session of 1905–06 a five-year optional course is offered. In this course the subjects, selected from the regular four-year course, are as follows:

First year.	Second year.	Third year.	Fourth year.	Fifth year.
Anatomy.	Physiological and Organic Chemistry.	Bacteriology.	Practice.	Clinical Medicine.
Histology.		Pathology.	Surgery.	Clinical Obstetrics.
General Chemistry.	Physiology.	Hygiene.	Obstetrics.	Clinical Surgery.
	Materia Medica.	Therapeutics.	Gynecology.	Laryngology.
		Clinical Microscopy.		Otology.
				Ophthalmology.
				Dermatology.
				Psychiatry.
				Pediatrics.

This course requires an average of not less than 800 hours annually.

Examinations are held at the end of each course. Subsequently recitations are had in each subject in order that the knowledge acquired may be kept fresh in mind. A general examination is held at the end of the fourth year, for the optional course at the end of the fifth year.

ANATOMY.

D. Kerfoot Shute, A.B., M.D.	*Professor of Anatomy*
W. F. R. Phillips, M.D.	*Assistant Professor of Practical Anatomy*
Geo. B. Heinecke, M.D.	*Assistant Demonstrator of Anatomy*
Virgil B. Jackson, M.D.	*Assistant Demonstrator of Anatomy*
E. E. Richardson, M.D., M.S.	*Assistant Demonstrator of Anatomy*
W. A. Frankland, M.D.	*Assistant Demonstrator of Anatomy*
S. H. Greene, Jr., M.D.	*Instructor in Anatomy*
J. L. Riggles, M.D.	*Instructor in Anatomy*
R. M. Little, M.D.	*Assistant Demonstrator of Anatomy*
Geo. M. Ruffin, M.D.	*Instructor in Anatomy*
H. W. Lawson, M.D.	*Assistant Demonstrator of Anatomy*
Jos. D. Rodgers, M.D.	*Assistant Demonstrator of Anatomy*

The course in Anatomy is given in a series of lectures, demonstrations, recitations from text-books, and practical laboratory work. The purpose of the lectures is to prepare the student for his practical work in the laboratory. The lectures are illustrated by lantern slides, models, charts, and diagrams. The class is divided into small sections for the purpose of demonstrating the bones, joints, actual dissections, and frozen sections. The student, having been so prepared, is required to dissect satisfactorily one lateral half of the cadaver. Throughout the course every opportunity is taken to emphasize the application of Anatomy to the practice of medicine in all its departments.

Text-books: Cunningham's Text-book of Anatomy, Cunningham's Manual of Practical Anatomy.

Collateral reading: Quain's Anatomy, Spalteholz's Anatomy, Taylor's Applied Anatomy, Wiedersheim's Structure of Man.

GRADUATE COURSE IN NEUROLOGY.

This course includes laboratory work, readings, and recitations. The nervous system is investigated in typical animals of the different classes, especially with the view of gaining some insight into the phylogeny of the central nervous system in man. The growth of the brain and its physical characters as related to intelligence are investigated. The histology and embryology of the central nervous system and the sense organs are studied. A history of the guiding conceptions in neurology is to be acquired. The course is designed to inculcate a sound knowledge of the architecture and functions of the nervous system of man for the use of students of anatomy, medicine, and psychology.

HISTOLOGY.

John B. Nichols, M.D.	*Professor of Histology*
D. Webster Prentiss, M.D.	*Assistant Professor of Histology*
Henry M. Jewett, M.D.	*Assistant Instructor in Histology*
C. L. Davis, M.D.	*Assistant Instructor in Histology*

Instruction in Histology is given in the first half of the first year. The minute structure of the tissues and organs of the body is presented in a systematic course of lectures illustrated by specimens thrown on the screen by means of the projection microscope. Subsequently the same structures are studied under the microscope. Recitations are held regularly upon the subjects shown and studied. Practical instruction is given in microscopical technique and in the care and manipulation of the microscope and the preparation of specimens.

Text-book: Nichols' Histology.

Collateral reading: Piersol's Histology, Böhm and Davidoff's Histology.

PHYSIOLOGY.

William P. Carr, M.D.	*Professor of Physiology*
Charles S. White, M.D.	*Assistant Professor of Physiology*
H. C. Elliott, M.D.	*Instructor in Physiology*
T. C. Holloway, M.D.	*Assistant Instructor in Physiology*

This course consists of lectures, recitations, conferences, and laboratory exercises. Lectures are given daily during the second half of the first year, and cover all the important facts and theories pertaining to the subject. The lectures are illustrated by diagrams, models, and prepared specimens. Recitations are held daily on assigned lessons from a standard text-book. Conferences are held weekly. The practical work is conducted in a well-equipped laboratory provided with modern apparatus. An abundant supply of material is kept throughout the year. Each student is required to set up apparatus and perform a number of experiments under the direction of an instructor. Demonstrations are given only when the experiment is such that it cannot be carried out by the student. The student is required to keep a record of the exercises performed, and these are regularly criticised by the instructors. The class is divided into small sections, so that each student receives a large amount of personal attention.

Text-book: Kirke's Physiology.

Collateral reading: Landois' Physiology, American Text-book of Physiology.

CHEMISTRY.

Charles E. Munroe, Ph.D.	*Professor of Chemistry and Toxicology*
Edward G. Seibert, M.D.	*Assistant Professor of Chemistry*
Thomas M. Price, Ph.D.	*Instructor in Bio-Chemistry*
Otis D. Swett, B.S.	*Instructor in Chemistry*
Elmer S. Newton, B.A.	*Assistant*
Arthur N. Tasker, B.A.	*Assistant*

General Chemistry. A series of illustrated lectures, accompanied by recitations and exercises, on theoretical, inorganic, organic, and technical chemistry. Tuesday, Thursday, and Saturday, at 4.50 p. m. Professor Munroe, Mr. Swett.

Organic Chemistry. A series of lectures and recitations on the acyclic and cyclic hydrocarbons and their derivatives, with special reference to physiology and medicine. Monday and Thursday, at 5.40 p. m. Professor Munroe.

Physiological Chemistry. A series of lectures and recitations on the proximate principles of the human body, such as the proteids, carbohydrates, fats, and the relation of the chemical constitutions of these bodies to physiological processes, together with a consideration of the principal secretions and excretions of the human body. Asst Professor Seibert.

Analytical Chemistry. A brief course in qualitative and quantitative analysis, with a view to acquainting the student with those methods which may be applied in medicine and the special tests for the alkaloids. Professor Munroe, Asst. Professor Seibert, Assistants Newton and Tasker.

Clinical Analysis. A laboratory course covering urinanalysis, examinations of the gastric fluid, analyses of milk and of water, a study of alkaloidal reactions, and a practical examination of the chemical properties of the substances treated of in the course of physiological chemistry. Professor Munroe, Asst. Professor Seibert, Assistants Newton and Tasker.

Text-books: Simon's Manual of Chemistry, Platt's Manual of Qualitative Analysis and Medical Chemistry.

Collateral reading: Hammarsten's Physiological Chemistry, Richter's Organic Chemistry, Barker's Text-book of Elementary Chemistry.

ADVANCED WORK.

Bio-Chemistry. A laboratory course in the chemical examination of some of the chief foodstuffs, the tissues and fluids of the body, and the products of certain organisms; also the isolation of the digestive enzymes and a study of their action *in vitro*. Dr. PRICE.

MATERIA MEDICA AND THERAPEUTICS.

THOMAS A. CLAYTOR, M.D. ....*Professor of Materia Medica and Therapeutics*
FRANCIS P. MORGAN, M.D. ....*Lecturer on Materia Medica*
WALTER H. MERRILL, M.D. ....*Instructor in Electro-Therapeutics*
....*Instructor in Pharmacology*

This course is given in the second and third years.

Second year. (1) Lectures upon Materia Medica, including a demonstration of drugs and their preparations. (2) Recitations upon the preparations, their doses, and the various antidotes for poisons. (3) Practical exercises in prescription writing. (4) An optional course in Pharmacy is offered.

Third year. (1) Systematic lectures upon the physiological action of drugs and their effects in health and disease, their therapeutic uses, and their methods of administration. (2) Lectures and section demonstrations in electro-therapeutics. (3) Demonstrations in the laboratory illustrating the physiological action of the more important drugs. (4) Prescription writing, in which the students are given hypothetical cases for which to prescribe. Prescriptions are corrected and returned to the students. Students are also required to write prescriptions upon the black-board before the class, and other members are called upon to criticise, correct mistakes, suggest improvements or objections.

Text-book: Wood's Therapeutics.

Collateral reading: Hare's Practical Therapeutics, Culbreth's Materia Medica and Pharmacy.

BACTERIOLOGY AND PATHOLOGY.

JAMES CARROLL, M.D. ....*Professor of Bacteriology and Pathology*
T. S. D. GRASTY, M.D. ... .*Instructor in Bacteriology and Pathology*
H. H. DONNALLY, M.D. ....*Instructor in Bacteriology and Pathology*
EUGENE LE MERLE, M.D. ....*Assistant Demonstrator of Bacteriology and Pathology*

The course in Bacteriology and Pathology is given in the third year.

In Bacteriology an effort is made to give the student a practical knowledge of (1) the preparation of the various culture media; (2) the principles of disinfection and sterilization, and

(3) the methods of cultivating, staining, and studying bacteria. Special attention is given to the pyrogenic organisms and the bacilli of diphtheria and tuberculosis.

The latter half of the session is devoted to Pathology, and the student is now prepared to appreciate the association of bacteria with certain definite lesions in the tissues. After the detailed study of inflammation, the diseases of the various organs are taken up in succession. For this purpose sections illustrating the various pathological conditions are carefully selected and given to the student to be stained, mounted, and studied under the immediate supervision of an instructor. These sections thereafter become the property of the student. The course terminates with the microscopical study of the several varieties of tumors.

The course in Clinical Microscopy is given at the conclusion of that in Pathology. It embraces the study of fresh and stained preparations of human blood in normal and pathological conditions; the Widal test for typhoid fever; the developmental stages of the malarial parasites in the blood and in the mosquito; the common forms of intestinal parasites and the microscopical examination of the urine. In the fourth year students are required to spend two weeks in the clinical laboratory of the University or other approved hospitals.

Text-books: Abbott's Principles of Bacteriology, Zeigler's Pathological Anatomy.

ADVANCED WORK.

Advanced students who desire to continue the work will be encouraged to undertake bacteriological and pathological studies of the cases that come to autopsy.

Candidates seeking Master's degrees may undertake special studies and practical research work in Bacteriology, provided they have already taken at least one course of study in this subject, including elementary practical work in the laboratory.

Candidates for the degree of Doctor of Philosophy may elect to take Bacteriology either as a major or a minor topic. In the former case they must submit evidence to show that they have already received at least a single complete course of instruction, including the necessary elementary practical work in this subject.

HYGIENE.

W. F. R. PHILLIPS, M.D. .... *Professor of Hygiene*

The course in Hygiene is devoted to teaching the relations of habits and surroundings to health. Consideration is given to domestic and municipal sanitation and to the principles underlying legislative interference in matters of public health. This course is given principally by recitation from a prescribed text-book. The subject is taught in the second year.

Text-book : Harrington's Hygiene.

Collateral reading : Notter and Firth's Hygiene.

SURGERY.

J. Ford Thompson, M.D.	*Professor of Surgery*
Thos. E. McArdle, M.D.	*Professor of Minor Surgery*
A. R. Shands, M.D.	*Professor of Orthopedic Surgery*
James F. Mitchell, M.D.	*Assistant Professor of Surgical Pathology*
E. P. Copeland, M.D.	*Instructor in Surgery*
J. Lawn Thompson, M.D.	*Assistant in Minor Surgery*

The instruction given in this course embraces systematic lectures upon the principles and practice of surgery. Recitations are held twice a week, in which the subjects presented by the lecturer are impressed upon the students. The different surgical operations are illustrated upon the cadaver, and the uses of all the important surgical instruments and appliances are demonstrated in the same manner.

Minor Surgery. Practical instruction is given in the application of splints, bandages, and dressings used in the various surgical diseases and injuries. Lectures and practical instruction are also given in the preparation of materials used in antiseptic and aseptic surgery, the preparation of the patient, sterilization of the instruments, and the methods of administering anesthetics.

Orthopedics. A course of lectures and recitations on the pathology, etiology, course, and termination of chronic joint diseases is given.

Surgical Pathology. A systematic series of demonstrations upon the pathological anatomy of surgical diseases and injuries is given. These demonstrations are supplemented by reference to microscopical specimens, charts, photographs, and diagrams.

Text-book : American Text-book of Surgery, Wharton's Minor Surgery.

Collateral reading: von Bergmann's System of Surgery, Park's Surgery by American Authors.

CLINICAL SURGERY.

J. Ford Thompson, M.D.	*Professor of Clinical Surgery*
Charles W. Richardson, M.D.	*Clinical Professor of Laryngology*
John Van Rensselaer, A.B., M.D.	*Clinical Professor of Surgery*
W. K. Butler, M.D.	*Clinical Professor of Ophthalmology*
D. Kerfoot Shute, A.B., M.D.	*Clinical Professor of Ophthalmology*
William P. Carr, M.D.	*Professor of Clinical Surgery*
A. R. Shands, M.D.	*Clinical Professor of Orthopedic Surgery*
Francis R. Hagner, M.D.	*Clinical Professor of Genito-Urinary Surgery*
John R. Wellington, M.D.	*Assistant Clinical Professor of Surgery*

General Surgery. In the third year amphitheater clinics are given, at which the general principles of surgical diagnosis and of operative technique and procedure are emphasized and illustrated.

General and Special Surgery. In the fourth year the class is divided into sections for the study and examination of surgical cases in the hospital wards. The students are also assigned to work as dressers and assistants on the surgical out-patient departments of the different hospitals. Practical work is required of each student in preparation of dressings, sterilization of instruments, and operations on the cadaver. In the latter part of the year each student is given an opportunity to assist at a major operation. The clinical work is supplemented by the study and discussion of case histories.

In Ophthalmology, Otology, and Laryngology the students are required to attend a certain number of clinics, and each student must report upon one assigned case.

In Orthopedics they are required to take clinical instruction in the application of special apparatus and of plaster of paris to the correction of deformities.

Instruction in Genito-Urinary surgery and in cystoscopy is given in clinics and in section work.

OBSTETRICS.

Albert F. A. King, A.M., M.D., LL.D.	*Dean Emeritus, Professor of Obstetrics*
Edward E. Morse, M.D.	*Assistant Professor of Obstetrics*
Julian M. Cabell, M.D.	*Assistant Professor of Obstetrics*
H. S. Medford, M.D	*Instructor in Obstetrics*

The course in Obstetrics comprises a series of lectures on the science and art of midwifery, and is given in the third year. The chief purpose of the lecturer is to arrange, simplify, and explain the matters studied in the text-books, so as to render them more easily intelligible and to indicate their relative importance. The lectures are illustrated by diagrams, models, manikins, natural preparations, and instruments. The class is divided into sections, and each student performs various obstetrical operations upon the manikin. Recitations from text-books are held throughout the term. In the fourth year clinical instruction in obstetrics is given, the class being divided into small sections and each section being required to attend a stated number of cases.

Text-book: King's Manual of Obstetrics.

Collateral reading: Hirst's Obstetrics, Williams' Obstetrics, Jewett's Practice of Obstetrics.

THEORY AND PRACTICE OF MEDICINE.

Sterling Ruffin, M.D	*Professor of Theory and Practice*
B. L. Hardin, M.D	*Lecturer on Physical Diagnosis*
L. H. Reichelderfer, M.D	*Instructor in Medicine*
H. C. Macatee, M.D	*Instructor in Medicine*

The method of instruction employed in this subject is as follows: (1) Lectures with weekly recitations. (2) Clinical lectures at the University Hospital, with practical instructions in the art of diagnosis and methods of taking and recording the history of medical cases. (3) Laboratory instruction in the use of instruments of research for the clinical study of sputum, blood, feces, etc. (4) A course of lectures to the class in physical diagnosis.

Text-books and works of reference: Osler's Practice of Medicine, Tyson's Practice of Medicine, Anders' Practice of Medicine, Saling and Kalteyer's Modern Medicine, Hare's Practical Diagnosis, Musser's Clinical Diagnosis, Simon's Clinical Diagnosis, Klemperer's Clinical Diagnosis, Cabot's Clinical Examination of the Blood.

CLINICAL MEDICINE.

Geo. N. Acker, A.M., M.D	*Professor of Clinical Medicine*
G. Wythe Cook, M.D	*Professor of Clinical Medicine*
Thos. A. Claytor, M.D	*Professor of Clinical Medicine*
Sterling Ruffin, M.D	*Professor of Clinical Medicine*
Eugene Le Merle, M.D	*Clinical Instructor in Nervous Diseases*
H. C. Macatee, M.D	*Clinical Instructor in Medicine*
L. H. Taylor, M.D	*Instructor in Clinical Medicine*

Clinical Medicine is taught during the third and fourth years. Instruction is given by means of clinical lectures, ward classes, actual bedside work by the students, and conferences at which the cases studied are thoroughly discussed.

The work for the third and fourth years is graded and distinct.

Third year: The class is divided into sections, and weekly each section receives instruction in clinical diagnosis. An amphitheater clinic is given weekly, at which methods of diagnosis and treatment are presented and the use of instruments of precision illustrated and explained.

Fourth year: The class is divided into sections of two students each. These sections, under the direction of instructors, are held responsible for the conduct of the cases assigned them. They are required to obtain the histories, make the physical examination, determine the diagnosis, and institute the treatment; they also make the necessary clinical laboratory examinations.

Weekly conferences are held, at which the cases studied by the sections are presented and discussed under the supervision of the clinical teachers.

Amphitheater clinics are given, at which interesting or unusual cases are presented and explained by the clinical professors.

The clinical instruction is also supplemented by the study and discussion of case histories.

GYNECOLOGY.

J. Wesley Bovée, M.D.	*Professor of Gynecology*
G. Brown Miller, M.D.	*Instructor in Gynecology*
A. L. Staveley, M.D.	*Professor of Clinical Gynecology*
W. A. Frankland, M.D.	*Assistant Instructor in Clinical Gynecology*

The subject of Gynecology is taught in the third year in a course of lectures and text-book recitations. In the fourth year the class is taken in sections of one to two students each into the Gynecological Dispensaries for clinical instruction in examinations, diagnosis, and treatment. In larger sections the class attends amphitheater clinics given by the Professors of Gynecology and Clinical Gynecology.

Text-book: Hirst's Diseases of Women.

Collateral reading: Dudley's Gynecology, Penrose's Diseases of Women, Montgomery's Text-book of Gynecology.

NERVOUS DISEASES.

....*Professor of Nervous Diseases*

Lectures and clinics are given upon the more common and important nervous affections.

Text-book :

LARYNGOLOGY AND OTOLOGY.

CHARLES W. RICHARDSON, M.D..*Professor of Laryngology and Otology*
O. A. M. MCKIMMIE, M.D.,*Clinical Instructor in Laryngology and Otology*
H. S. DYE, M.D........ *Clinical Instructor in Laryngology and Otology*

This course comprises lectures and clinical instruction on diseases of the nasal passages, pharynx, larynx, and also the ear. Practical demonstrations are given in the use of the laryngoscope and other instruments required in these special branches.

Text-books: Kyle's Diseases of the Nose and Throat, Dench's Diseases of the Ear.

OPHTHALMOLOGY.

W. K. BUTLER, M.D,......................*Professor of Ophthalmology*

A course of lectures on this subject is given in the fourth year. The chief object of the course is to direct attention to the elementary principles of the subject. It is not intended to qualify the student as a specialist. This course is supplemented by clinical instruction.

Text-book : May's Diseases of the Eye.

DERMATOLOGY.

H. C. YARROW, M.D.................. .....*Professor of Dermatology*
R. B. CARMICHAEL, M.D. ....*Clinical Professor of Dermatology*

The lectures on this subject are illustrated by diagrams, models, photographic illustrations of disease from life, and also by the exhibition of cases. In connection with the course clinical instruction is given.

Text book : Jackson's Diseases of the Skin.

MENTAL DISEASES.

WILLIAM A. WHITE, M.D.... ....*Professor of Mental Diseases*

A series of lectures and clinics is given upon the subject of insanity in its varied forms. This course is given in the fourth year.

Text-book: Kraepelin's Clinical Psychiatry.

Collateral reading: Church and Peterson's Mental and Nervous Diseases, Bevan Lewis' Mental Diseases.

MEDICAL JURISPRUDENCE.

W. C. WOODWARD, M.D. .... *Professor of Medical Jurisprudence*

This course is given in the third year, and is designed to familiarize students with the rights and obligations of physicians, both legal and ethical, and to qualify them to apply the facts of medical science to the solution of problems in law.

Text-book: Reese's Medical Jurisprudence and Toxicology.

PEDIATRICS.

GEORGE N. ACKER, A.M., M.D. . ... *Professor of Pediatrics*

In the fourth year didactic and clinical lectures are given upon diseases of infants and children and the importance of the proper management of these diseases by diet and hygiene.

Text-book: Holt's Diseases of Infants and Children.

EXAMINATIONS.

Examinations are held at the end of the course in each subject, and a general examination at the end of the graduating year. Students failing in examination in one major subject or not more than two minor subjects will be permitted to be reëxamined at the beginning of the next academic year. Students failing in reëxamination in a major subject must repeat the year and the subjects in which they do not attain a grade of 80 or more. Students failing to appear at the regular examinations will not be examined until the next regular examination, except by special permission of the Faculty, and in this event an extra fee of $5.00 will be charged. Students failing to pass satisfactorily their practical laboratory examinations will be required to repeat the laboratory courses and pay the regular laboratory fees. Students will not be admitted to examination unless they have paid all fees due at the time or present a permit signed by the Assistant Treasurer. The reexaminations for 1905–06 will be held in the Medical Building, September 20, 1905. In order to avail themselves of the privilege of reëxamination students must file their applications with the Dean not later than September 1, 1905.

Examinations are written, oral, and practical so far as the nature of the subjects permit. The time allowed for written examinations is as follows:

Two hours each for Anatomy, Physiology, Chemistry, Materia Medica and Therapeutics, Histology, Pathology, Bacteriology, Practice, Obstetrics, and Surgery; one hour each for Gynecology, Hygiene, Dermatology, Ophthalmology, Pediatrics, Minor Surgery, Orthopedics, Mental Diseases, Medical Jurisprudence, Nervous Diseases, Otology, and Laryngology.

For oral examinations such time is allowed as the examiner deems sufficient to test the attainments of the student. For practical examinations in the laboratories one hour is given to each subject.

In addition to the foregoing examinations students are required: to dissect satisfactorily one lateral half of the cadaver; to report satisfactorily an analysis of a specimen of urine and a clinical examination of a specimen of blood; to examine and report upon six clinical cases in general medicine and two cases in surgery; to perform satisfactorily two major surgical operations upon the cadaver; to work not less than two weeks in the Dispensary Service of the University or other hospitals; to work not less than two weeks in the Clinical Laboratory of the University or of some other hospital approved by the Dean; to take charge of one or more obstetrical cases and to report thereon; to examine and report on one case in either Ophthalmology, Laryngology, Otology, Dermatology, or Orthopedics; to report upon one case in Gynecology.

Examinations are marked upon a scale of 100. A grade of 70 is required to pass an examination.

Every student repeating a year will be required to pay one-half the tuition fee of the academic year. Laboratory fees are required for each year in which laboratory work is done.

Students do not receive their numerical grades, but are notified that they have attained grades A, B, C, D, E, or F, as the case may be. A signifies 96 to 100; B signifies 90 to 95; C signifies 80 to 89; D signifies 70 to 79; E signifies failure; F signifies failed to appear for examination.

REQUIREMENTS FOR DEGREE.

Every candidate for the degree of Doctor of Medicine must be at least twenty-one years of age and of reputable character. He must have complied with the admission and other requirements herein set forth. He must file with the Dean on or before May 1 a notice of his intention to appear for graduation, and he must be present at the time specified for examination, and also at Commencement or Convocation. The degree is not conferred in the absence of a candidate except by special consent of the President's Council. Graduates of other accredited colleges must spend one year in residence at this school and must pass satisfactory examinations in all subjects in order to receive a diploma.

To graduate, students must have passed in all subjects.

Candidates who in their work and examinations attain general averages of 80 or more will be presented to the Faculty for consideration with reference to being designated as "having graduated with distinction." If in the opinion of the Faculty such candidates have shown themselves to be possessed of more than ordinary merit, they will have inscribed upon their diplomas beneath their degree the words "with distinction," and the names of such graduates will be distinctively printed at the head of the list of graduates of the year.

Candidates who have completed their courses, but have not passed their final examinations, may take the fall examination upon payment of a fee of $10, and, if successful, receive their diplomas at the Winter Convocation upon the payment of the diploma fee.

A student who has failed of graduation after repeating his final year will not be permitted to maintain his connection with the school.

COURSES IN ARTS AND SCIENCES.

Students taking a full course for the degree of Doctor of Medicine may, if otherwise qualified, be admitted without additional fee, except laboratory fees, to courses in the Department of Arts and Sciences, provided such courses do not exceed in the aggregate six hours a week.

SCHOLARSHIPS.

Applications for scholarships should be filed with the Registrar of the University not later than September 15. Students holding scholarships pay the matriculation, library, laboratory, and graduation fees, and make the deposit to cover breakage.

CORCORAN SCHOLARSHIPS.

In recognition of the liberality of the late W. W. Corcoran, the University has established in this department six free scholarships.

Two of these scholarships are open for competitive examination to the graduates of the several high schools and the manual training school of the District of Columbia. These two scholarships are awarded to the two students whose averages are highest.

Two of the scholarships are open for competitive examination to graduates of any reputable high school or college who shall give satisfactory written evidence of pecuniary inability and certificates of good moral character and industry. These two scholarships are awarded to the two graduates whose averages are highest.

The remaining two scholarships are open for competitive examination to students who, though not graduates of any high school or college, give satisfactory evidence that they are fitted by previous education for the study of medicine, and at the same time give satisfactory written evidence of pecuniary inability and certificates of good moral character and industry. These two scholarships are awarded to the two students whose averages are highest.

In establishing these averages professional aptitude and general qualifications are considered along with scholastic ability.

MEDICAL MISSIONARY SCHOLARSHIPS.

Two Medical Missionary Scholarships will be given to such applicants as are judged by the President of the University best qualified to enter upon the study of medicine for the purpose of becoming medical missionaries. These scholarships are awarded for one year only, but they may be renewed.

PRIZES AND HOSPITAL APPOINTMENTS.

A general examination prize of $50 is annually awarded to the candidate for graduation who attains the highest average grade in all subjects.

Professor H. C. Yarrow gives a prize for the best examination in Dermatology.

Professor Charles W. Richardson gives a prize for the best examination in Laryngology and Otology.

Professor Acker gives a prize for the best examination in Pediatrics.

Professor Butler gives a prize for the best examination in Ophthalmology.

Three interns are annually appointed in the University Hospital. They are appointed from those members of the graduating class who have served as externs. Seven externs are also appointed from graduates and from the fourth-year class. In making these appointments scholastic standing and general efficiency and aptitude are considered. Appointments to similar positions are open to the graduates and undergraduates of this school in the following other hospitals of the city: Garfield Memorial Hospital, Emergency Hospital, Columbia Hospital for Women, Casualty Hospital, Providence Hospital, Washington Asylum Hospital, Children's Hospital, Episcopal Eye, Ear, Throat, and Nose Hospital.

CLINICAL FACILITIES.

The following hospitals are open to the students of this school for clinical study:

University Hospital.—This hospital is a part of the educational equipment of this University, and is intended to be used primarily in instructing the students in clinical medicine and surgery. It has also in connection with it an out-patient or dispensary service in all departments.

Garfield Memorial Hospital.—This institution has 118 charity beds. Clinics are given regularly throughout the session by members of the Faculty connected with the visiting staff of the hospital. There is also an out-patient department, giving good opportunities for experience in the practice of physical diagnosis.

Children's Hospital.—Regular clinical instruction is given in the medical and surgical wards by members of the Faculty on the visiting staff of the hospital. This institution has 100 charity beds. There is also a large out-patient department.

Emergency Hospital and Central Dispensary.—This hospital has 36 charity beds, and has a very large out-patient service. The large emergency service gives exceptional facilities in clinical surgery. Several members of the Faculty are on its visiting and dispensary staffs and give clinical instruction to the students.

Columbia Hospital for Women.—This hospital has 68 charity beds for diseases peculiar to women and 50 charity maternity beds. Members of the Faculty are connected with its service and use its facilities for clinical instruction.

Providence Hospital.—This institution has a large charity service—100 beds for medical and surgical cases and 130 maternity beds.

The Government Hospital for the Insane.—This hospital is maintained by the United States Government. It has 2,500 beds. Clinical instruction in mental diseases is given by the superintendent of the hospital, who is a member of the Faculty of this school.

Episcopal Eye, Ear, Throat, and Nose Hospital.—Excellent opportunities for clinical instruction in ophthalmology, otology, laryngology, and rhinology are offered by this hospital. Members of the Faculty are on its staff.

Lutheran Eye and Ear Dispensary.—This dispensary affords good opportunities for clinical study of diseases of the eye, ear, throat, and nose. Clinical instruction is given by member of the Faculty.

Casualty Hospital.—Opportunities in emergency and dispensary work are afforded by this institution.

LOCATION OF HOSPITALS.

UNIVERSITY HOSPITAL, H street between Thirteenth and Fourteenth streets, northwest, and adjacent to the Medical Building. Visiting staff:

Members of the Faculty of the Department of Medicine.

Garfield Memorial Hospital, Florida avenue and Tenth street, northwest. Members of the Faculty on the visiting staff:

Professor Claytor, Clinical Medicine; Professor Cook, Clinical Medicine; Professor Thompson, Clinical Surgery; Professor Staveley, Clinical Gynecology; Professor Carmichael, Clinical Dermatology; Professor Butler, Clinical Ophthalmology; Professor Hagner, Clinical Genito-Urinary Surgery.

Children's Hospital, W street between Twelfth and Thirteenth streets, northwest. Members of the Faculty on the visiting staff:

Professor Thompson, Clinical Surgery; Professor Acker, Clinical Medicine.

Emergency Hospital and Central Dispensary, Fifteenth street and Ohio avenue, northwest. Members of the Faculty on the visiting staff:

Professor Carr, Clinical Surgery; Professor Hagner, Clinical Genito-Urinary Diseases; Dr. Jackson, Clinical Surgery; Dr. Macatee, Clinical Medicine; Professor Carmichael, Clinical Dermatology; Dr. Miller, Clinical Gynecology; Dr. Le Merle, Clinical Nervous Diseases.

Columbia Hospital for Women, Twenty-fifth street and Pennsylvania avenue, northwest. Members of the Faculty on the visiting staff:
Professor Bovée, Clinical Gynecology; Professor Morse, Clinical Obstetrics.

Providence Hospital, Second and D streets, southeast. Member of the Faculty on the visiting staff:
Professor Bovée, Clinical Gynecology.

Episcopal Eye, Ear, Throat, and Nose Hospital, Fifteenth street between L and M streets, northwest. Members of the Faculty on the visiting staff:
Professor Richardson, Clinical Otology and Laryngology; Dr. McKimmie and Dr. Dye, Clinical Otology and Laryngology.

Lutheran Dispensary, Fourteenth and N streets, northwest. Member of the Faculty on the visiting staff:
Professor Butler, Clinical Ophthalmology.

Government Hospital for Insane, Anacostia, D. C. Member of the Faculty on the visiting staff:
Professor White, Mental Diseases.

Casualty Hospital, Massachusetts avenue, northeast. Members of the Faculty on the visiting staff:
Professor Wellington, Clinical Surgery; Dr. Frankland, Clinical Gynecology.

LABORATORIES.

The different laboratories are all modern and equipped with the necessary apparatus for thorough work.

PATHOLOGICAL MUSEUM.

A great many valuable and interesting specimens are contained in the Pathological Museum of this school. Their number is increased by additions from time to time. These specimens are particularly valuable to the students as illustrating the changes produced by disease.

OTHER MUSEUMS.

The Army Medical Museum affords an unrivaled opportunity for studying the conditions met with in military surgery. It contains on exhibition a collection of anatomical and pathological specimens unequaled by any other museum. Other Government museums are the Museum of Hygiene, in connection with the Medical Department of the Navy. The National Museum contains the most complete and best arranged collection of materia medica in the world. The drugs are shown in all their processes of manufacture. The Botanic Gardens the Smithsonian Institution, the Fish Commission, the Department of Agriculture all afford opportunities for study both in medicine and its collateral sciences.

THE MEDICAL LIBRARY.

The Medical Library is open for study and consultation from 9 a. m. to 10.30 p. m. It contains at present more than 1,200 volumes, and provision is made in the annual library fee charged every student to add to it as published the important new works on medicine. As the library stands at present, it is an excellent working collection for the medical student.

OTHER LIBRARIES.

Washington contains the Library of the Surgeon General's office of the United States Army, the most complete medical library in the world. This library, as all other libraries of the Government, is open to the public between the hours of 9 a. m. and 4.30 p. m. There is also the Library of Congress and the many excellent libraries of the various other Government offices.

FEES AND CONTINGENT EXPENSES.

The following are the fees:

For the first year:	
Matriculation fee (payable only on first entry into the University)	$5
Library fee	2
Anatomical Laboratory fee	20
Chemical Laboratory fee	5
Tuition fee	110
Total fee	$142

For the second year:

Library fee	$2
Chemical Laboratory fee	5
Tuition fee	110
Total fee	$117

For the third year:

Library fee	$2
Tuition fee	110
Total fee	$112

For the fourth year:

Library fee	$2
Tuition fee	110
Graduation fee	10
Total fee	$122

The fees for the OPTIONAL FIVE-YEAR COURSE are the same for the first, second, and third years as for the regular four-year course.

For the fourth year:

Library fee	$2
Tuition fee	110
Total fee	$112

For the fifth year:

Library fee	$2
Tuition fee	55
Graduation fee	10
Total fee	$67

In addition to the above fees an annual deposit of $10 is required of every student. This deposit is to cover loss, breakage, or damage to the property of the school. If at any time the charges against this deposit reduce the amount to the credit of the student to $2.50, the student will be required to restore the deposit to the original sum. This deposit, less the charges made against it, is refunded to the student at the close of the academic year or upon withdrawal. No change will be made in the fees fixed at registration except in case of withdrawal, and then only upon notice in due form and from the end of the current quarter session in which such withdrawal shall be approved. Applications for the granting of a withdrawal should be made on the prescribed form to be obtained from the Registrar.

Students are urged to purchase their own microscopes, but those who do not care to do so may rent them from the University at the following rentals:

Microscope for Histological Laboratory use	$3
Microscope for Bacteriological, Pathological, and Clinical Microscopy Laboratory use	$5

PAYMENT OF FEES.

All fees are to be paid to the Assistant Treasurer. Tuition fees are payable quarterly, in advance. Matriculation, library and laboratory fees are payable in full, in advance.

BOARD AND ROOMS.

The price of table board and rooms varies according to locality. Good accommodations may be secured at some distance from the University buildings for two hundred dollars for the session of thirty-three weeks. In the neighborhood adjacent to the University, by reason of its nearness to the heart of the best business section of the city, prices range from two hundred and fifty to three hundred and fifty dollars for the session of thirty-three weeks. Students frequently form clubs for the purpose of obtaining a reduction in the cost of living. A register of approved boarding-houses is kept by the Assistant Treasurer, who will gladly furnish information in relation thereto, or in connection with any other matters conducive to the comfort of students seeking a residence in the city of Washington.

For catalogues, application blanks, and further information, address

Otis D. Swett, *Registrar,*
The George Washington University,
Washington, D. C.

STUDENTS OF MEDICINE.

First Year.

Name.	Legal residence.	City address.
Amick, Louis Burton	W. Va.	Takoma Park, D. C.
Athey, Thomas Franklin	Mo.	3107 Wisconsin Avenue.
Avery, Frederick Scott	Mich	637 Md. Avenue, N. E.
Bluemfeld, Raymond	D. C.	323 H Street, N. E.
Bradley, Henry Moffatt	S. C.	1007 Mass. Avenue, N. E.
Brooks, Robert Renney	N. Y.	Fort Myer, Va.
Brown, Frank J	Iowa	32½ Bates Street.
Brown, Wade Hampton	N. C.	748 3d Street.
Bryan, William Alvin	Iowa	216 North Capitol Street.
Brown, Wiley Gustavus	Texas	3431 Brightwood Avenue.
Buell, Arthur Whitton	Cal.	2812 13th Street.
Chartters, George C	Va	713 9th Street.
Castell, Louis Bernard	D. C	Barnes Hospital.
Dunmire, Roy Franklin	Pa.	1006 B Street, N. E.
Flournoy, Addison Hogul	Md.	2009 1st Street.
Dunn, Joseph Francis	D. C	1324 Corcoran Street.
Everett, Ernest Day	Mo.	28 T Street, N. E.
Fontaine, Edward Redd	N. C.	725½ 6th Street.
Frey, John Paul	D. C	1224 30th Street.
Garnett, Algernon Sydney	Va.	1021 Vermont Avenue.
Gehringer, George Matthew	Pa.	1121 15th Street.
Gonzalez, Antonio C., Jr	N. Y.	1417 K Street.
Griffith, Thomas Everett	Pa.	718 4th Street, S. E.
Gwinn, Chester Arthur	Mo.	Fort Myer, Va.
Harper, Bernard Fitzhugh	Va.	Children's Hospital.
Hart, George H	Pa.	2317 1st Street.
Higgins, Daniel W., Jr	Md.	130 11th Street, N. E.
Horgan, Edmund Joseph	D. C.	733 13th Street.
Klugh, George Fred	S. C.	1028 Vermont Avenue.
Lawrence, Charles Solomon	N. C.	617 H Street.
Littlefield, John Ramsay	D. C.	833 4th Street, N. E.
Luttrell, David Harris	Va.	1434 N Street.
Lipman, David Hinckley	N. C.	The Berkshire.
MacKnight, Robert Stanley	D. C.	1765 U Street.
Mata, Carlos	Costa Rica.	1919 K Street.
Maxwell, Maurice Hopkins	Md.	Sibley Hospital.
Molzahn, Herman E.	Minn	1637 13th Street.
More, Frederick Clinton	Pa.	234 E Street, N. E.
Moyer, Samuel	Pa.	General Land Office.
Neate, John Sweyn	D. C.	3009 Dumbarton Avenue.

Name.	Legal residence.	City address.
Nicolais, Joseph	Pa	Hyattsville, Md.
Noyes, Edward Rogers	D. C.	1014 S. Carolina Ave., S.E.
Ong, Harry Alfred	Ohio	917 S Street.
Powell, Charles Elcon	D. C.	509 Spruce Street.
Patterson, Orra Edgar	Ill.	The Garfield, 13th Street.
Pyne, Herbert Samuel	Utah	1331 L Street.
Quick, Ralph Andre	Va.	Falls Church, Va.
Rozzelle, Keith Kistler	N. C.	207 8th Street, N. E.
Selinger, Sydney M	D. C.	816 F Street.
Sherwood, John Wesley	Md.	136 11th Street, N. E.
Simons, Harry E	D. C.	212 A Street, S. E.
Smith, Ernest	D. C.	510 B Street, N. E.
Smith, Ernest Wellington	W. Va.	1004 H Street.
Smith, William Marion	Ky.	1119 K Street.
Stilson, Joseph Rock	D. C.	640 East Capitol Street.
Stilson, Lewis Francis	Md.	237 New Jersey Ave., S. E.
Stephens, Charles Rundle	Ill.	1825 H Street.
Tayloe, Harry Marbury	Va.	1121 17th Street.
Taylor, Edward	Ala.	1013 P Street.
Teeter, Frank Irvin	Mo.	810 6th Street.
Tewksbury, William Davis	Colo.	[illegible]16 3d Street, S. E.
Thompson, Lewis Royer	Pa.	801 New Jersey Avenue.
Turnbull, Samuel Jay	Fla.	803 12th Street.
Way, David	D. C.	1322 L Street.
Weber, Frederick Clarence, Jr	Ohio	Dept. of Agriculture.
Weidemann, Clarence Conrad	D. C.	1237 Princeton Street.
Wheatley, Charles	Md.	715 14th Street.
Wheeler, Arthur Joseph	Ill.	1014 I Street.
Wilhelm, Joseph	Ill.	214 5th Street, N. E.
Willis, Harry Clay	N. C.	932 K Street.
Wolfe, James Thruston	Va.	1400 K Street.
Wolfe, Rowland Daniel	Md.	1517 10th Street.

Total First Year Students.................... 72

Second Year.

Name.	Legal residence.	City address.
Anderson, Paul	Ill.	617 19th Street.
Barnesby, Walter Raleigh	Ill.	The Brunswick.
Biggs, Joseph Rozier	D. C.	1930 8th Street.
Bogan, Joseph Borrows	D. C.	606 Mass. Avenue.
Bone, George Ward	W. Va.	1110 16th Street.
Bower, Charles Franklin	S. Dak.	Senate Annex.
Boyd, William Alexander	N. C.	The Fredonia.
Bryson, Herbert James	Pa	714 12th Street, N. E.
Burket, Clare William	Pa	1519 Kingman Place.

Name.	Legal residence.	City address.
Carter, Paul Irving	Cal.	1418 L Street.
Carr, William Brown	Va.	1418 L Street.
Chapman, John Madison	Md.	The Plymouth Rock.
Chichester, Harry Denison	Texas	725 14th Street.
Chipman, Cline N.	Ky.	1422 11th Street.
Cliff, Benjamin Franklin	N. C.	2411 Pa. Avenue.
Conklin, Coursen Baxter	N. Y.	1611 13th Street.
Coster, Leonard M.	D. C.	403 2d Street, S. E.
Darnall, Moses Hubbard	Texas	1717 Riggs Place.
Dent, Wade Gilbert	Md.	1312 12th Street.
Dewey, Christian Henry	Ill.	The Plymouth.
Emery, James Armitage	Md.	The Olympia.
Evans, Edwin Gough	D. C.	27 8th Street, S. E.
Forrer, Herbert Stratford	Ill.	407 2d Street, S. E.
Frazier, Frank Eugene	Wis.	1607 7th Street.
Garton, Alfred Clarke	Ind.	1318 12th Street.
Grant, John Lee	Va.	19 Grant Place.
Grant, Charles Vincent	Pa.	The Caywood.
Habel, William P. H.	Pa.	618 22d Street.
Hanback, Irvin Leonard	D. C.	606 15th Street, N. E.
Hart, John White	Mass.	949 S Street.
Haywood, John Kerfoot	N. Y.	1210 T Street.
Hoberman, Samuel	N. J.	908 12th Street.
Holmes, Robert	N. H.	Pension Office.
Hickok, Le Roy W.	N. Y.	500 M Street.
Holden, Fred A.	Mo.	718 12th Street.
Howlett, Howard Henry	D. C.	1313 Wallach Place.
Johnston, Henry Vernon	D. C.	1221 New Jersey Avenue.
Kearney, Henry Walper	Va.	1302 L Street.
Kilgour, Robert Mortimer	Mont.	1210 N Street.
Kline, Lane Bruce	Va.	1211 Q Street.
Lake, Norman Powell	Va.	811 K Street.
Lamkin, Joseph Bayard	Ga.	913 New York Avenue.
Legg, Thomas Henry	Md.	718 12th Street.
Lee, Thomas Alexander, Jr.	Va.	2211 Washington Circle.
Levy, William Victor	N. J.	1339 K Street.
McDaniel, James Madison	S. C.	1119 K Street.
McIver, Evander McNair	N. C.	310 C Street.
Mess, William A.	Ind.	Garfield Memorial Hosp.
Meyer, Henry Adolph	Pa.	212 8th Street, S. E.
Miller, Robert Halsey	Ky.	1207 N Street.
Moffitt, Harry Watson	Ohio	127 B Street, S. E.
Monk, Frederick Hinton	N. Y.	Dept. Com. and Labor.
Morris, Roy Thomas	Ohio	1209 O Street.
Nielson, Alexander John	Utah	1633 19th Street.

Name.	Legal residence.	City address.
Rector, Frank Leslie	Okla.	1331 L Street.
Rock, George Roscoe	N. J.	The Caywood.
Schapiro, Louis	Wis.	740 9th Street.
Sheiry, Dillon	D. C.	237 8th Street, N. E.
Sims, William Carter	La.	1010 B Street, N. E.
Smith, J. Allen	N. Dak.	1023 Vermont Avenue.
Smith, Paul Jones	Kansas.	511 10th Street.
Smith, Thomas Francis	Fla.	The Le Grand.
Stephenson, Eugene T.	Texas.	1382 E Street, N. E.
Stetson, Thomas	D. C.	Nat'l Safe Deposit Co.
Stout, Henry Isaiah	D. C.	207 9th Street, S. W.
Tallmadge, Henry Hobart	Pa.	2924 14th Street.
Tastet, David Walker	D. C.	War Department.
Thomas, William J. G	D. C.	905 O Street.
Tomlin, Timothy Harrington	Mo.	1009 B Street, N. E.
Van Vliet, Frederick C., Jr.	N. J.	819 15th Street.
Walker, Emmert Delon	Cal.	1010 H Street.
Wallace, Clifton Robert	Va.	940 9th Street.
Warner, Harry J.	Ill.	Dept. of Agriculture.
Waring, John Harvie	Va.	1830 Oregon Avenue.
Watson, Charles Lyman	D. C.	2217 Washington Circle.
Weithas, Richard Charles	N. Y.	Land Office.
Whamond, Frederick Gordon	Ill.	1234 Duncan Street.
Willets, David Gifford	N. J.	1221 N. Y. Avenue.
White, Eben Wesley	N. Y.	1236 11th Street.
Wilson, Edward Comstock	N. Y.	1318 Whitney Avenue.
Yates, Robert J.	Va.	1300 Pennsylvania Ave.

Total Second Year Students 81

Third Year.

Arntzen, Julius L.	Mo.	1016 15th Street.
Battles, Samuel Lee	La.	701 7th Street, N. E.
Beale, Kenneth Foster	Mass.	Branchville, Md.
Beauchamp, Jesse Leaphart	Miss.	1016 15th Street.
Brecht, Nelson Duvall	D. C.	609 22d Street.
Brown, Ernest William	Conn.	1310 Princeton St.
Burnell, William Barry	Oregon.	1519 Kingman Place.
Catts, Samuel Rozier	Va.	Navy Yard.
Clements, Lyman Jairus	Miss.	123 6th Street, N. E.
Clifford, John Sullivan	N. H.	810 12th Street.
Compton, Arthur George	D. C.	1121 Roanoke Street.
Currie, James Daniel	Texas.	1229 New York Avenue.
Davis, Ezra McKnight	S. C.	740 9th Street.
Dollman, Clarence M.	Va.	1000 N Street.

Name.	Legal residence.	City address.
Dorman, John Wesley	Ohio.	706 11th Street.
Edmunds, Meade Randolph	Miss.	1217 K Street.
Forsythe, James Steele	Miss.	18 N Street.
Goss, Ralph Montgomery	Ga.	1519 Kingman Place.
Gow, James Robertson	Ohio.	122 D Street, N. E.
Grayson, Charles Shober	N. C.	1017 K Street.
Hailman, Hubert Victor	D. C.	301 C Street.
Hamilton, Kosciusko	Tenn	1203 11th Street.
Hankemeyer, Nathaniel W	Mass.	1922 Sunderland Place.
Hardesty, William S.	W. Va.	402 Ethelhurst Flat.
Harrison, Charles Alben	Ill	1335 H Street.
Hartley, Clarence A	Ind	919 New York Avenue.
Hastings, John Emery	N. Y.	The Cumberland.
Heflebower, Roy Cleveland	D. C.	915 New Hampshire Ave.
High, D. Lee	Md.	416 M Street.
Hill, Paul Stanley.	Maine	The Sherman.
Hooe, Robert Arthur, Jr	Va.	1110 New York Avenue.
Huber, Levi Houston	Pa.	906 I Street.
Humphries, John William	Va.	19 Grant Place.
Jorgenson, H. Christian	N. Y.	Navy Yard.
Kebler, Lyman F	Pa.	1322 Whitney Avenue.
Laughlin, John Royer	Pa.	1460 Corcoran Street.
Lanza, Anthony J	N. Y.	1232 13th Street.
Lund, Herbert Zacharias	Utah	107 2d Street, N. E.
McAfee, Larry Benjamin	Ind.	House of Representatives.
McCollum, Hiram	N. Y.	1416 Hopkins St.
McLean, Frank	D. C.	735 13th Street.
Mebane, William Belson	N. C.	1023 Vermont Avenue.
Middleton, Carroll Sewall	Md.	1402 H Street.
Montgomery, Herbert Bridger	Ohio	230 Massachusetts Ave.
Moore, Mead	Ky.	1307 F Street.
Nutting, Hugh	N. Y.	621 13th Street.
Murdoch, Lester Hughes	Texas	1713 4th Street.
Perry, Benjamin Cissel	Md.	Casualty Hospital.
Phillips, Orlyn Sargent	Neb.	1215 12th Street.
Pinco, Louis Henry	N. Y.	746 9th Street.
Reeves, Arthur F	N. C.	2411 Pennsylvania Ave.
Sheep, William Lloyd	N. C.	711 8th Street.
Smith, William H., Jr	D. C.	1314 Connecticut Ave.
Smith, Stephen Harrison	Va.	801 Duke St., Alex., Va.
Spenser, Armand	N. Y.	1123 11th Street.
Spire, Richard Lee	N. Y.	1120 C Street, S. E.
Stanley, Arthur Camp	Wis.	2330 Massachusetts Ave.
Sterne, Charles Fague	D. C.	1823 Riggs Place.
Stevenson, Earle C	Neb.	1404 L Street.

Summary.

First year	72
Second year	81
Third year	71
Fourth year	74
	298

DEGREE OF DOCTOR OF MEDICINE CONFERRED AT COMMENCEMENT, 1904.

Albert Allemann, District of Columbia.
A. B., Gymnasium of Soleure, Switzerland.
Bathurst Browne Bagby, Virginia.
Grant Samuel Barnhart, Pennsylvania.
Hugh Arbuthnot Brown, New Jersey.
A. B., Princeton University.
John R. Buck, Maine.
Heber Butts, Missouri.
William Earl Clark, Jr., District of Columbia.
H. Noble Crandall, Maryland.
Frederick William Didier, North Carolina.
Amelio A. Dutari, Panama.
A. B., Bogota; B. S., Paris.
Forrest F. Fadeley, Virginia.
James Grant Fisher, Pennsylvania.
Robert Walter Frischkorn, Pennsylvania.
Homer Gifford Fuller, Connecticut.
Ph. B., Yale.
John L. Gorny, Ohio.
Thomas Reeder Gough, Maryland.
B. S., Maryland Agricultural College.
Joseph W. Halford, North Carolina.
Louis H. Hanson, Wisconsin.
A. B., Harvard University.
Richard Cooke Harley, Maryland.
Francis Edward Harrington, Virginia.
*Montgomery Earle Higgins, Maryland.
John Alvin Holmes, District of Columbia.
Montafix Wilson Houghton, District of Columbia.
*Charles Wilbur Hyde, Ohio.
Laurence Maxwell Hynson, District of Columbia.
Samuel Augustus Jones, Ohio.

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* Honorable mention.

Carlisle P. Knight, District of Columbia.
Thomas Linville, North Carolina.
Patrick Hamilton Lloyd, Maryland.
William Earl Manville, Tennessee.
Herbert Everard Martyn, District of Columbia.
Carroll Hackney May, Virginia.
Adolph Monroe, Maryland.
Frederick Erskine Montgomery, District of Columbia.
Arthur Lapham Murray, New York.
Luther Clarence Neill, Tennessee.
*Egil Thorbjorn Olsen, Illinois.
  Ph. G., University of Illinois.
William Francis Patten, North Dakota.
George Peterson, Maryland.
  A. B., Maryland Agricultural College.
Llewellyn Powell, Virginia.
Milton Hickox Prosperi, District of Columbia.
John Chester Pyles, Maryland.
Harry Sebastian Reger, Ohio.
Robert Conrad Ruedy, Virginia.
William Schulze, Louisiana.
Roy Ernest Seitz, Illinois.
Harry T. Smith, Pennsylvania.
Richard Lightburn Sutton, Missouri.
William Henry Syme, Virginia.
Joseph Lawn Thompson, District of Columbia.
Frederick Yates, District of Columbia.
  M. D., Howard University; LL. B., LL. M., National University.
William Glenn Young, Tennessee.

DEGREE OF DOCTOR OF MEDICINE CONFERRED AT WINTER CONVOCATION, 1905.

Guy Stark Saffold, Maryland.

Total number graduates...................... 53

---

*Awarded the Faculty Prize, 1904.

GEOGRAPHICAL DISTRIBUTION OF STUDENTS OF THE DIFFERENT DEPARTMENTS OF THE UNIVERSITY.

Alabama	7
Arizona	2
Arkansas	8
Bohemia	1
California	11
Chile	1
China	1
Colorado	9
Connecticut	10
Costa Rica	2
Delaware	1
District of Columbia	425
Florida	5
Georgia	13
Germany	1
Hawaii	1
Idaho	4
Illinois	41
Indian Territory	1
Indiana	23
Iowa	25
Japan	2
Kansas	25
Kentucky	26
Korea	1
Louisiana	7
Maine	11
Maryland	91
Massachusetts	50
Michigan	22
Minnesota	19
Mississippi	18
Missouri	23
Montana	3
Nebraska	14
New Hampshire	15
New Jersey	24
New Mexico	1
New York	98
North Carolina	25
North Dakota	3
Ohio	57
Oklahoma Territory	4
Oregon	5
Pennsylvania	82
Peru	1
Philippine Islands	1
Porto Rico	2
Rhode Island	3
South Carolina	12
South Dakota	14
Tennessee	17
Texas	23
Utah	9
Venezuela	1
Vermont	9
Virginia	86
Washington	7
West Virginia	20
Wisconsin	25
Wyoming	4
Total	1,452
Auxiliary students	13
	1,465

SUMMARY.

MEMBERS OF THE FACULTIES AND TEACHING STAFF:		
Department of Arts and Sciences—		
Division of Graduate Studies	37	
Columbian College	45	
Division of Architecture	22	
Department of Medicine—		
Faculty of Medicine	64	
Faculty of Dentistry	16	
Department of Law and Jurisprudence	20	
Department of Politics and Diplomacy	22	
		226
Duplicates		60
Total		166
STUDENTS:		
Department of Arts and Sciences	583	
Department of Medicine	298	
Department of Dentistry	66	
Department of Law	466	
Department of Jurisprudence and Diplomacy	52	
Total		1,465

GEOGRAPHICAL DISTRIBUTION OF STUDENTS OF MEDICINE.

Alabama	1
Arkansas	2
California	3
Colorado	1
Connecticut	2
District of Columbia	49
Florida	2
Georgia	5
Idaho	1
Illinois	13
Indiana	6
Iowa	3
Kansas	2
Kentucky	5
Louisiana	4
Maine	4
Maryland	23
Massachusetts	6
Michigan	2
Minnesota	3
Mississippi	6
Missouri	7
Montana	1
Nebraska	4
New Hampshire	2
New Jersey	7
New York	24
North Carolina	14
North Dakota	2
Ohio	7
Oklahoma	2
Oregon	1
Pennsylvania	23
South Carolina	5
South Dakota	1
Tennessee	2
Texas	9
Utah	3
Vermont	2
Virginia	28
Washington	1
West Virginia	4
Wisconsin	5
Foreign	1
	298

SUMMARY.

First Year Students	72
Second Year Students	81
Third Year Students	71
Fourth Year Students	74
Total	298
Graduates in Medicine	53
Members of Faculty and Teaching Staff	64

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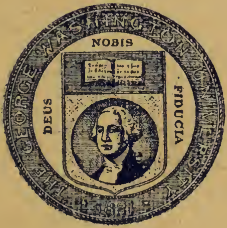
VOLUME V NUMBER 3

The George Washington University Bulletin

DEPARTMENT OF MEDICINE NUMBER



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DEPARTMENT OF MEDICINE NUMBER

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The George Washington University
BULLETIN

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THE INFLUENCE OF AMERICAN SURGERY ON EUROPE.*

By Carl Beck, M.D. Professor of Surgery in the Postgraduate Medical School, University of the State of New York, President of the St. Mark's Hospital of New York.

In order to realize fully, what American Surgery has achieved, so far, and how it compares with that of other countries, it will be opportune to go back to ancient times.

The earliest surgical records come from Egypt. In the papyrus found by Ebers, the great German Egyptologist, which was written 1552 B. C., a section, dealing with tumors on the surface of the body, reads: "If this tumor comes and goes under your fingers, trembling even when your hand is still, say—it is a fatty tumor—and treat it with the knife, after which treat it as an open wound." It is maintained, that the old Egyptian embalmers had considerable anatomical knowledge which entitled them to act as "dressers of wounds," that is surgeons. The fact exists, that the Egyptians had a treatise on anatomy. According to Manetho this was attributed to Athothis, son of Menes, who reigned in 5241 B. C.

Specimens of Jewish surgery are found in the Talmud, the rabbis being acquainted with methods of suturing wounds, trephining, supplying the loss of substance.

Of Indian Surgery, the Charaka-samhita, the oldest medical work in existence, tells us many interesting facts. It is deplorable that the Sanskrit text of this work was only translated shortly ago. The Charaka-samhita was probably written in 1000 B. C. Another well-known Indian book, composed somewhat later, is the Susruta. These works contain a list of complicated surgical instruments, among them are such recommended for amputations, for lithotomy, the treatment of fistulae, polypi, sores, ascites, inhalation for cough and dyspnoea, obstruction of the intestines, etc.

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*Address read at the first Fall Convocation of The George Washington University in Continental Memorial Hall, October 17, 1906.

mus Placentinus, Hugo von Lucca, Brunus Longoburgensis, Theodericus, the bishop, Lanfrancus and especially Guido de Cauliaco, must be mentioned. But they were situated like the preacher in the desert, and as a whole surgery was held in so little esteem that it became a rule among the German Mastersingers of this sad period, not to accept an apprentice or disciple, until he could prove, that he was fourteen years of age, of decent parentage and "in particular, not related to any clerk, hangman, *surgeon,* or similar individual."

But fortunately, the long cheerless mediaeval night was followed by the dawn of the Cinquecento, the same merry period which gave great Christopher his chance to discover us. This era, so justly called the Renaissance, stirred up minds all over the world. Antique culture was studied in its original diction again. Old inveterated dogmas fell to the ground and criticism came up, and with it also, the Renaissance of Surgery began. The genius of fearless Andreas Vesalius of the German town of Wesel convinced Carl V, the German Emperor, that anatomy was the foundation of surgery and that unless the government would permit of dissection for scientific purposes, surgery would remain a living lie.

That day in fact, on which autopsies became legitimate through the Hidalgo-philosopher on the German throne, marks the resurrection of surgery.

Now the splendid epoch stamped by the genius of French surgeons, followed. Ambroise Paré reintroduced the ligature of the blood vessels, his large experience on the battle-field also enabling him to advise a more simple kind of treatment of gun-shot wounds. Surgical schools were founded in France, J. L. Petit, in contradiction to his name, becoming the greatest representative of the surgery of the eighteenth century, Désault founding the first surgical clinic, and Larrey, of whom a Napoleon said that he was the only living man whom he ever respected, showing us the greatest and noblest of all military surgeons. The largest influence upon the surgical world was exerted by Dupuytren, however, who was not only the great master of the scalpel, but also excelled by his thorough understanding of pathology, which was at his time in its infancy.

While the French were on top, our English brethren were by no means lazy. Nearly three hundred years ago Harvey detected the circulation of the blood vessels. In John Hunter we see the great surgical pathologist of the eighteenth century, and in Astley Cooper and Spencer Wells the bold but conscientious operators. The greatest blessing which the surgical world received from Great Britain, however, was the antiseptic wound-treatment inaugurated by immortal Lister.

In Germany the far-seeing eye of Vincenz von Kern gave us the open wound-treatment, the principles of which have come to honor again. Scientific pathology, born in the same country, brought reforms, which, like monuments, *aere perennius*, will forever stand in history. The theoretical reflections of Rokitansky, Skoda, Helmholtz, and Virchow were soon utilized in practice by surgical masters like Dieffenbach, the father of plastic surgery, by Stromeyer, Von Langenbeck, von Esmarch, Volkmann and Billroth. The discovery of the Roentgen Rays, which revolutionized some of the most important departments of surgery, has also added new lustre to the German laurels. The highly developed university life favored the universal direction of the minds, so characteristic for the nation of thinkers and dreamers, their tendency to deepening of thought and their admirable endurance in methodical work, were factors which made Germany the center of pathological science, this great fundament of modern surgery.

Still, the art of surgery could be practiced only under the greatest technical difficulties on account of the pain the patient had to endure during an operation. Long procedures could not be carried out at all, therefore the manual skill of the old surgeons, who were forced to perform their operations with the greatest possible hurry, must have been enormous and calls for our highest admiration.

It is assumed, that in ancient times anodynes were known. The potion, which the Trojan Helen was able to brew so well and mischievously, was supposed to banish care and dispel depression. The women of Thebes prepared the "Extractum Thebaicum, irae et tristitiae medicamentum." It is reported of Julius Caesar, that before he escaped the pirates, he put them to sleep by dropping a narcotic into their wine.

How far these reports are true, cannot be proven. It is certain, that at a remote period we see a manifold interest displayed in the study of bodily pain and its alleviation.

During the classical age, which left us the most wonderful expression of physical pain in the matchless Laokoon-group, bodily pain was frequently represented on the stage.

But there is no indication that ever before a surgical operation was performed during which the patient did not suffer the horrid agonies of combined physical and psychical pain, until it was reserved to the United States of America, to give the world that immense blessing, anesthesia. The discovery of sulfuric ether in 1846, as a safe means for making a patient senseless without any danger to his life, brought more progress in a few years than thirty centuries had brought before. Operations could be performed now, the possibilities of which our ancestors could hardly dream.

The name of the discoverer, Dr. W. T. Morton, of Boston, should be a household word through the entire civilized world. But, alas, there is hardly one non-medical man who knows even the name of this greatest benefactor of suffering humanity.

Nothing illustrates the peculiarity of human nature more clearly than the deplorable fact that the public at large ignores such men. Public squares are ornamented with the statues of generals, whose victories were sometimes won in spite of rather than because of their abilities, or simply by the bravery of their subordinates. The truly great hero, who has sacrificed himself to find the means of preserving lives instead of destroying them, is forgotten; while the least thing gratitude could do for him would be to erect a monument in every village of the earth.

To those of our European confrères, who are still endeavoring to belittle American achievements, it may be said, that if America had contributed nothing else than anesthesia to surgery, it would have done well enough.

But it has contributed a great deal more. It is true, in general the United States could not parade with their medical education of thirty or thirty five years ago. Preliminary education was not obligatory and more than one brave Agricola metamorphosed, like great Cincinnatus, who was called to the head of the army from his plough, into a faithful son of Hippocrates over night. Only eighteen years ago any candidate could even in the best eastern strongholds of science be promoted to the degree of an M. D., after having studied for two years. We may be somewhat ashamed of that period but at the same time, we can well boast of the rapidity with which the change to the better was made. It would have taken a century in the old world to accomplish that progress which was made here in a decade.

And if the whole truth will be said, then our criticizing colleagues in Europe must not only accentuate the state of cloudiness, ignoring the bright sun-rays which were shining even through the darkest epochs of American history.

It is true, American medical training is still briefer than European. But even when American physicians graduated after a two years course, they knew well that their training was incomplete and the majority tried hard to perfect themselves. Most of the European physicians went into practice after four years study then; but many of the Americans became assistants in hospitals, or practiced under the auspices of an experienced physician several years, thus doing voluntarily what the law might well have required. Today the plan of study in American medical colleges embraces a term of four years, while in Germany, France and England it is at least five. Now, while this is a year more, we may emphasize that the American student really studies and loses no time in libations and duels. The control which the recitation scheme exerts compels him to stick to his work. This, perhaps, makes him somewhat too solemn, while the average German student represents the other extreme. The American student might well absorb some of the poetic qualities of his hilarious German confrère, while the German student would be benefited by adopting some of the more business-like methods of his transatlantic commilito.

Of course, the great European institutions, especially those of Germany, England and France, serve as models in many respects. They are well endowed by the government and the professors do not go into the fight for existence. Still, not meaning to belittle their admirable work, the question might not be out of place: How would it compare, if they had to make a living from their practice, at the same time? We deplore this fact, but we cannot help admiring the American medical soldier who fights his daily battle at the sick bed, and still has enough energy left to spend the midnight hours at the laboratory, while every new problem he solves is intended to prevent disease, and thus to lessen the earnings of his own profession. Is there anything less selfish in this world? Common sense appreciated long ago that the medical scientist and teacher should be more independent from practice; yet it may be doubted whether a teacher who is not at all engaged in practice will be best fitted for instruction after all. The teacher must never lose sight of the fact that whatever his research may tend to, it must always be to the benefit of human beings, if he does not want to lose his vital relation with the greatest of all professions.

It is true, that to the extraordinary thoroughness and perseverance characterizing German investigators, the medical sciences are greatly indebted. On the other hand, a great deal of time and opportunity has been wasted by this praiseworthy quality on trivial subjects. Virtue may become a fault, sometimes, as Goethe says: "Wohlthat wird Plage." No American could, for instance, be found who would devote a lifetime to write six volumes on the iris of the viper. It was reserved for a German investigator to display such loving interest in a snake.

The motto of the American is utility. Where he sows he expects fruit. He has a keen eye for the "proficit and deficit." This, also, is both his virtue and his fault. No wonder that he astonishes the civilized world—not only in surgery—by the brilliancy of his technics. Theory is not the sphere he enjoys; it is practice. Goethe may have thought of the American when he says in Faust:

Grau, theurer Freund, ist alle Theorie
Und gruen des Lebens goldner Baum."
(Gray, my dear friend, is theory,
But ever green, life's golden tree.)

And while Germany will probably keep its leading position as far as the theoretical branches of medicine are concerned, the United States will become authoritative in practice. Asepsis, the daughter of antisepsis, while the result of the research of Pasteur, Lister and Koch, was methodically introduced into practice by von Bergmann. But the greatest perfection of the new method has an American trademark. Nowhere are aseptic technics so commonly practiced and so perfect as in the surgical strongholds of the United States. The natural cleanliness, so characteristic of American habits, has of course been a most favorable element for the introduction and appreciation of aseptic principles.

The American nation is acknowledged all over the world as the cleanest. It is therefore not astonishing that asepsis has been more highly appreciated here than anywhere else, and it is easy to understand that this country is destined more than any other nation to develop asepsis to its fullest perfection.

It is safe to say that in many respects the United States have fulfilled a noble mission in this direction for many years, a task not to be underestimated. There are a number of signs indicating that this characteristic sense for cleanliness has, like some other American virtues, influenced other countries indirectly. What a change, for instance, is observed in immigrants who come from semibarbarous districts, where even an annual bath is regarded as an extravagant and foolish luxury. They sometimes carry all imaginable varieties of mother earth, especially on those surfaces of the body not covered by clothing. When they scratch themselves for obvious reasons they become self-inoculated with the germs harbored in their well cultivated filth. As bacteriological investigations prove, all sorts of pus-producing germs are found in their skin; so it is only too natural that the skin surface of such individuals is covered with boils and swollen glands. The example of their new fellow citizens soon teaches them a good lesson, and in the second generation the sense of cleanliness is generally very well developed.

Of course, there will always be some who are never able to be thoroughly clean, no matter how often they are admonished. Originally, it is true, such virtues arise more from a trait of character than from education. Some, so to say, are born clean. Still education does a great deal. The youngster always reflects the mother more or less. If he is clean, there is little doubt that his mother took pains in teaching him how to clean his hair, his finger-nails, the sole of his foot, his mouth, and his clothing. And external cleanliness often is the reflection of the purity of character. Tell me who your mother is and I will tell you who you are.

And most important is this virtue in the members of the medical profession. A physician whose exterior is not absolutely clean should be invariably rejected by his patient. If his finger-nails are not scrupulously clean, the same hand which should be destined to destroy disease is apt to produce it.

There is even among the commonest American people a natural sense for asepsis, similar to that in the old Roman sister. This accounts for the enjoyable fact, that the American patient so-to-say enters the atmosphere of the operating room in a kind of aseptic disposition.

It is by no means surprising therefore that the mortality rate of some American surgeons to-day is lower than that in any other country, the mortality in some of the important abdominal operations descending to less than 1 per cent.

But there are still more sun-rays in the history of American surgery, which, I feel justified to say, reflects the extraordinary history of this country. Many such rays were shining even during the interregnum, that much criticized period, because medical men arose whose names will never vanish from the medical history of the world. We may only mention the names McDowell, Warren, Sims, Mott, Parker, O'Dwyer and Corning. Europe should not forget, that at the time when French surgery was at its zenith, when French professors dictated the surgical fashions, when Dupuytren, the greatest surgeon of his time, refused to be operated on, saying that "he would rather die by the hands of God than by those of his colleagues," the genius of the simple American country physician, McDowell, broke the prejudice of centuries by performing the first ovariotomy. Dupuytren had strong reasons for his despondent standpoint, because he suffered from a pus-chest and among fifty operations, carried out by him for this condition, forty-seven were unsuccessful. To-day, thank God, the proportion is reversed.

It was shortly afterward that Valentine Mott astonished the surgical world by his ligation of the arteria innominata.

Modern gynecology is the creation of Marion Sims. He was a country physician, like his southern colleague. McDowell, and like the great German, Robert Koch, who was a village doctor until his forty-fifth year, his immortal experiments, which showed the tubercle bacillus to be the cause of the most important human disease, having been made far away from, and uninspired by, great university centers. It was O'Dwyer who invented laryngeal intubation; Corning is the father of spinal anesthesia; Senn's intestinal suture is used, and Murphy's method of uniting the intestines by his ingenious button, is practiced all over the world.

And what would the knowledge of the most important abdominal disease be, had American ingenuity not lifted the veil from the pathology of the vermiform appendix and exposed its mischievousness?

The old world was always used to give us, but in reference to the knowledge about appendicitis it had to receive from the young transatlantic giant. The American perspective is now being accepted by the European· surgeons, their views becoming greatly altered at last. How the majority stands now, may be illustrated by their attitude during a discussion of one of the leading medical societies of Germany, which I had the privilege to attend.

The discussion on appendicitis, which was inaugurated by the Berlin Medical Society on July 18th, attracted so much attention in fact, that its distinguished President, Professor von Bergmann, was induced to call two subsequent meetings for the exclusive debate upon this special subject. Most of the eminent teachers of the Berlin University participated, among them Olshausen and Landau, the gynecologists, Kraus, the greatest German internist of the present day, Henoh, the pediatrist, Ewald, the enterologist, and the surgeons Israel, Krause and Rotter.

Almost all pleaded in favor of early surgical interference. Although it was most gratifying to hear the same views expressed, for which many American surgeons have been fighting for the last twenty-five years, it was disappointing to find that no allusion was made to their immortal merits in this respect. As this omission was pre-eminently based upon the traditional European ignorance concerning medical events in the new world, I was glad to avail myself of the chance offered to me by the kind invitation of the President, to congratulate the distinguished society on having become so thoroughly Americanized in the question of appendicitis.

Especially did I emphasize the fact that a glance over the tremendous literature of this most important part of the surgery would reveal that until a few years ago the early operation for appendicitis was regarded an adventurous policy in Germany. "Only an American would do such a thing," a celebrated surgeon in Berlin said to me not more than eight years ago, when I tried to convince him that the apparently mild symptoms of this disease were frequently misleading and often contrasted greatly with the severe pathological condition of the appendix.

This knowledge, that in the majority of cases it is impossible to make an accurate diagnosis as to whether there was a so-called catarrhal appendicitis or a beginning perforation, was gained by American surgeons who learned the facts from their frequent autopsies in vivo. That the infection was much more dangerous than the well guarded scalpel, is an American axiom. That early interference, even with the risk, that once in a while, an unnecessary operation may be performed, is the safest procedure, was proven by the extremely low death rate of such American surgeons, as were given an early opportunity to operate by the family physician.

It was the genius of an American surgeon, which introduced the most important diagnostic factor in appendicitis, McBurney's point, into medical science. American surgeons, like Senn, Weir, Bull and Murphy, were the pioneers and advocated the necessity of removing the appendix during the free interval, that is even after a patient had recovered from an acute attack, because they realized thât with a few exceptions the disease had passed over into the chronic stage only. It is perfectly true that to the Germans belongs the credit for first having given a correct scientific description of the inflammation of the vermiform appendix. But they missed the causal nexus entirely, attributing the pus-accumulation in the right iliac fossa to an inflammatory process in the loose connective tissues which surround the caecum. It was not more than logical therefore that they gave this condition that fatal term "perityphlitis."

The first description in 1830 is from the pen of Goldbeck, under the auspices of his teacher Professor Puchelt, of Heidelberg, the same celebrated university to which we are indebted for the first description of cholelithiasis. (Loewenberg in 1554.)

Less than thirty years ago great Friedreich of the same old alma mater taught, that perforation of the vermiform appendix might be caused by the irritation induced by a grape seed, this occurrence always leading to death. Fortunately he claimed this kind of "ulceration" was extremely rare, inferring from the fact that he had not seen more than two cases of this kind. When I then, jurans in verba magistri, attended these lectures as a student, I hardly thought of ever seeing more than a few cases during my surgical career, while the more mature knowledge I had the privilege to obtain in this country enabled me later to remove more than a thousand appendices. Although Schmidt as early as 1847 came very near describing McBurney's point by calling attention to the peculiar intensification of the pain produced by pressure in the caecal region, emphasizing at the same time, the fact that the area of pain hardly exceeded the size of a nickel, none of these great thinkers, strange to say, thought of the most obvious indication of attacking this area directly.

In spite of the most convincing proofs brought by American surgeons in favor of early interference, the Germans, otherwise so progressive, until recently remained obstinate in their so-called conservative treatment of appendicitis, which, in other words, was nothing but a peculiar form of therapeutic nihilism. It is remarkable that the same men to whose genius we are forever indebted for the elementary knowledge of the surgery of the alimentary canal, liver and kidneys, were so long perplexed by the appendix. Let us be grateful that the nation which produced a Kant, the man of the categoric Imperative, has at last begun to respect the little treacherous rebel. American surgeons do not imagine even now that they know all about appendicitis. They have still left a good deal to their European confrères for further development, and no doubt they are justified in expecting especially, much from the theoretical research of German scientists.

The etymological conscience of the great Berlin society was again disturbed by the Greek ending of the Latin word, a union, which they regard as a misalliance. The terms perityphlitis, perityphlitis appendiculas, epityphlitis, scolecoiditis were again proposed for substitution. It is true that all these terms are irreproachable from an etymological point of view, but as to their real meaning they are absolutely misleading. The term "perityphlitis" has done incalculable harm, as it greatly diverts the mind from the real source of the evil, while the term "appendicitis" means exactly what it signifies. And moreover the whole world has become accustomed to it. Therefore the "term-scavengers" will have to swallow the pill after all, whether they like it or not. In German it may be compared with indulging in onions—Man weint dabei und isst sie doch.

Usus est tyrannus! They should remember that medical etymology shows a large number of more or less euphonious terms, which are unjustifiable or even senseless. Bronchus means passage for beverage Arteria airpassage, Parenchyma, effusion, Muscle, little mouse, and we are so much used to them and know their meaning so well that none of us would seriously consider proposing their abolition. The etymological autodafé on the part of the term-scavengers made the word appendicitis only more popular. We may predict that the American term will be used all over the world as long as there shall be a human appendix.

Especially the German term-scavengers should consider that the language of Goethe, Schiller and Lessing contains words which are nothing else but ungrammatical nonsense. And they are by no means compositions of foreign words, nor do they represent one of those special medical terms, which are so sarcastically rated by our good friends the philologists. No, they are used by them in every day language without any scientific rumination.

Is there for instance, a greater absurdity, than the German word "Bediente," which means exactly the opposite of what is meant? The "Bediente" in fact is the master, he is the individual who is served, not the one who is serving. But this term is still better liked in literature than the simple and correct "Diener," as if this word gave him a kind of an aristocratic odor.

"Ein bedienter Soldat" is just as wrong. In some German universities the term "Chirurgischer Instrumentenmacher" can be witnessed from the windows of the auditorium of celebrated philologists and in Berlin numerous "Bohemian Fruit Stores" are found, although a fruit store in the capital of the German empire must naturally be German.

It is not the maker who is surgical, but the instrument, and it is not the store which is Bohemian but the fruit. To the same etymological jurisdiction belongs "der duerre Zwetschgenhaendler."

The proposition of Professor Kraus, to request the government to demand more particulars as far as the statistics on the morbidity as well as the mortality of appendicitis are concerned, fell on fruitful ground. The Secretary of State, who honored the meetings by his presence, promised to see to it, that every German physician should be provided with question blanks for the purpose of entering the details of his experience, especially regarding diagnosis and operative treatment of appendicitis. In this respect Germany may serve as a model, and while the American physicians do not need as much elucidation in reference to appendicitis as the German, it will be of general benefit were they to adopt the same plan.

Another sign of American influence is found in Berlin. There the physiognomies of the good old Charité, the venerable temple of Aesculapius of the Berlin University and its neighbor, the anatomical institute, have greatly changed since last year. A score of large, modern buildings was erected, Orth's pathological institute, Hildebrand's surgical, Henoch's pediatric and Lesser's dermatological clinics simply representing the best and most progressive institutions of their kind. There is in fact a remarkable combination of architectonic beauty and general usefulness.

The greatest progress, however, being made in Berlin at the present time is represented by the new anatomical institute. No American should fail to visit it, not only because it is a real delight to look at it, but especially for the reason that its construction is based upon American ideas.

We have all reason to be proud of the fact that Professor Waldeyer, the greatest anatomist of the present age, who has instructed most of our eminent teachers of anatomy, gives full credit to the excellence of the American institutions which he had visited twice during the last few years.

"The Americans" such are Professor Waldeyer's own words, "are ahead of us Germans in many respects. The idea of placing kitchen as well as operating and dissecting rooms under the roof, wherever it was practicable, struck me as an extremely good one and I made up my mind at once to persuade the Prussian government to adopt the American plan in the construction of the proposed new anatomical institute, that is, to provide for abundant light from above as well as from the side."

"How can we draw students from America, as long as our dissecting rooms are dark and antiquated, while the new world is so far ahead of us in this respect?" was the argument, which convinced the Prussian Minister of Education after a long struggle.

The immense building is now almost completed. There are four large rooms or rather halls, which permit of simultaneous dissecting by 400 students. The space in fact is now so ample that each of the students of the second course, who have to dissect vessels, nerves and the sensorial organs, has his own table during the entire year.

Like Professor Waldeyer, who has become so true a friend of this country, many great European scientists have visited us. The International Congress of 1904 in St. Louis brought no less than one hundred and forty illustrious men from the other side to these shores. All were full of praise and if men, like Helmholtz, von Esmarch, Czerny, von Winckel, von Mikuliciz, Lorenz, Tillmanns, Escherich, Trendelenburg, Orth, Harrison, Segond and Faure asserted that they could not help learning a great deal during their visits in America we may safely believe that this is not merely a courteous phrase. The great European scientists who studied this country by personal inspection, are all admirers of it. It is only the small man, who enjoys belittling whatever comes from America. "What good can come out of Nazareth?" those idiots say.

Ewald, another celebrated visitor, wrote in an editorial of the Berlin Clinical Weekly four years ago: "How long may it take till we must go to the United States, as the engineers and men of industry had to long ago, to accumulate new scientific knowledge? Then the scientific exchange will not be one-sided but mutual."

The time has come. Where else is there a country with such immense resources and the ambition and the brains to utilize them? Where else is the spirit of liberality which receives the foreigner like a brother? The dawn of a new and glorious scientific era can be well perceived on the American horizon.

Yes, the time of reciprocity, for which we hoped so long, has come. Let us compete with our European confreres by mutual exchange. Let us visit Europe as frequently as possible and let the Europeans visit us. Let them give us their refined knowledge, based upon classical and fundamental research, and let us show them the splendid technical achievements which are so characteristic of the United States. If anything can help to secure eternal peace between the nations it is the strengthening of their scientific ties.

THE STUDY OF THE PHYSIOLOGICAL EFFECTS OF CHEMICALLY RELATED SUBSTANCES.*

By Charles E. Munroe, Ph. D., Professor of Chemistry and Toxicology

Through your kind consideration it was my privilege to be present at the initial meeting of this body when the objects sought were set forth, its plans formulated and its organization perfected, and as one who has been long connected with the University, I was much gratified to find that you had caught the spirit which now pervades our Alma Mater and had given expression to it in the best possible form by bringing together a body of its graduates for the promotion of professional study and the interchange of information and of the results of experiences. Admitted thus to this association, it is my desire to contribute so far as possible to its advancement and though my own profession is and my training has been in a different field, I may, perhaps, be permitted to urge you in the larger interest of your profession and for the credit of your Alma Mater to lend the influence of this society to fostering original research on broad lines, independent of professional applications, and carried on in so exhaustive a manner that the results will be distinctive and significant.

Every one of you can undoubtedly point out special and attractive fields for research, which, properly cultivated, would yield valuable results, for your profession is so many-sided and so all-embracing that it presents problems for solution at every point and furnishes opportunities for men of widely varying capacities and equipment to do useful original work. Naturally the field which I would advocate and urge you to cultivate is that one where the professions of chemistry and medicine meet.

From remote times the animal, vegetable and mineral kingdoms have been drawn upon to furnish curative agents for bodily ills. We now know that from each of these sources substances may be obtained which have a decided action upon animal organs and functions, but until very recently these materials have been used in a wholly empirical manner, and to-day, as the old remedies are used, they are still employed empirically. In fact, until chemistry became a science and the composition and, more recently, the constitution of the substances contained in, or obtained from, the materials used had been demonstrated, it was impossible to gain any rational idea as to their behavior and particularly as to the changes which they undergo in the body.

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*Read April 21, 1906, before The George Washington University Medical Society.

Although for two centuries many inorganic substances and some organic substances have been prepared in the laboratory and factory in a fairly pure and definite condition and much has been known about them, yet it is only in the last half century that we have begun to acquire a definite knowledge of the constitution of chemical substances and to recognize that their properties are dependent now only on the matter of which they are composed, but also upon the manner in which that matter is arranged, or, to formulate this on the atomic theory, that substances differ because of the kind, or the number, or the relative arrangement of the atoms of which their molecules are composed, and, following out this last statement, we find that as the molecular atomicity increases the number of different substances having distinctly different properties which may be produced from the same number of the same kind of atoms is enormous.

This information has been gained not alone by the analysis of these substances, but by their synthesis also, and further by a close study of their behavior on analysis and synthesis and when acted upon by well-chosen reagents. Through these means it has been found that, as a rule, the arrangement in any given case is definite and that, moreover, portions of these organized substances tend to act as a unit and to enter into and issue from chemical reactions as elementary atoms do and to possess in themselves specific properties. These compound entities, known as radicals, are then to be counted with as the elements are and in any consideration of the physiological action of the substances of which they form a part they must be taken into consideration as entities.

The discovery of the fact that complex substances could be built up as well as torn apart and that through this means substances, and especially organic substances, occurring in nature could be produced in the laboratory has given an immense impetus to the pursuit of chemistry, and this has been further stimulated by the fact that it has been found possible to so control the union of these atoms and radicals as to form new compounds not heretofore found in nature, though many of them are built upon the same type as those which occur naturally.

As a result many organic substances like indigo, alizarine, methyl salicylate, vanillin and the like, which were formerly obtained solely from vegetable sources, are now wholly or largely produced artificially, while an enormous number of synthetic preparations, which is daily being added to, are offered for use in the arts and as remedial agents, and it is found that the substances thus made may be produced commercially in a purer condition and giving more definite and simpler reactions than those which are extracted from complex organisms such as occur in plants and animals.

In the production and laboratory study of these bodies an enormous amount of information has been obtained regarding the importance of arrangement, as in the case of hydrazobenzene, which is an indifferent body, and benzidine, with the same empirical formula, which is a diacid base; methyl cyanide with an agreeable odor resembling leeks and the methyl isocyanide with a perfectly unbearable odor; ethyl sulphocyanide with an ethereal odor and the ethyl isosulphocyanide with the penetrating properties which characterize the mustard oils; the *a*-naphthylamine, which melts at 50 degrees, possesses a pungent odor and gives an azure blue with ferric chloride, and the *b*-naphthylamine, which melts at 112 degrees, is odorless and is not colored by ferric chloride; the laevo-modification of lactic acid, which is consumed by the *Pencillium glaucum* and the dextro-lactic acid, which remains unattacked by this micro-organism. These are but a few of a multitude of examples which might be cited showing the effect of constitution on the properties of isomeric bodies. As examples of the effect of radicals we may cite the case of benzene sulphimide, familiarly known as saccharine, for if we introduce into the benzene nucleus of this substance two atoms of bromine in place of hydrogen we have a body which gives a sweet taste on the front of the tongue and a bitter taste on the base of the tongue; if instead of bromine we introduce two nitryl groups into the benzene nucleus we obtain a body which is intensely bitter, without any sweetness; if now instead of the nitryl groups we introduce two amido groups we obtain a body which is intensely sweet, sweeter even than saccharine. In fact, it is estimated that four pounds of this body will bring a ton of glucose up to the sweetness of cane sugar. Or we may point to mercaptan, which differs from common alcohol only in that an atom of sulphur is substituted for oxygen and which Richardson finds produces a narcotic effect, but acts upon the various nerve centers in the reverse order of other narcotics.

The examples of this kind which may be cited are very numerous, but I will not weary you by repeating more of them. What has been given suffices to illustrate my contention that the constitution as well as the composition of chemical substances materially affects their behavior and that this must be taken into account in determinating their value as remedial agents. Furthermore, this great variation in properties which the variation in composition and constitution enables us to obtain at will, ought to render it possible for us, by proper selection and use, to produce a desired effect or any desired degree of effect upon any organ, whether in a normal or in a pathological condition, but though the means be at command, we must acquire the knowledge of how those means are to be used before the desired result can be produced.

It is my opinion that chemical science has reached so advanced a stage that this knowledge may now be acquired by a systematic review of the literature, recording the data according to some well-devised plan, and by supplementing this with systematic experiments for the purpose of reconciling or explaining conflicting reports and for filling in the gaps which exist in the former experimental schemes. I believe that in Washington we are most happily situated for carrying out such a scheme, for, as you are better aware than I, there has been an immense amount of experimental work of this kind carried out in the past, though much of it has been of a desultory character, and the literature to be reviewed is vast in extent, but the existence here of the library of the Army Medical Museum gives unusual opportunities for gathering this material together and arranging it in that systematic manner through which only can it be rendered of service.

In advocating a systematic scheme of experimental inquiry into the physiological effects of chemically related substances, I am not advancing a new idea, for the problem has been attacked repeatedly. According to Professor Benj. Silliman, Jr., Dr. James Blake, late of San Francisco, was the pioneer in this line of research, his results being published in the *Archives Generales de Medicine* as early as 1839, and his researches were continued for half a century, but they were chiefly, if not wholly confined to inorganic compounds. In the early sixties Dr. Berry W. Richardson began a series of systematic researches upon organic compounds, his results being communicated in the form of Annual Reports to the British Association for the Advancement of Science beginning in 1864 and continuing for many years. Drs. Crum Brown and Thomas B. Fraser also published in the Transaction of the Royal Society of Edinburgh for 1868-69 the results of their researches on the connection between chemical constitution and physiological action, their work being principally upon those imperfectly known bodies, the alkaloids and their substitution derivatives; and later, Dr. Wolcott Gibbs, of Harvard University, and Dr. Robert Hare, of the University of Pennsylvania, published in the *Archiv für Anatomie und Physiologie* the results of their "Systematic research on the action of constitutionally related chemical substances on animal organs," the work being confined to the study of the phenols, the nitro bodies and organic nitrates. I do not assume in these few references to have given even an outline of the literature. I have but referred to the few examples which I have conveniently at hand. All know how actively this field of research has been cultivated in recent years, especially in Germany, and it is so important and so promising a field that its future cultivation is ensured.

I have cited these examples, first, to show that men of the first rank in the medical and chemical professions have regarded this work as of importance; second, to show that it is one which is now open freely to any investigator, and, third, to indicate that thus far each investigator has confined himself to some special feature of the subject. What I advocate is a systematic attack upon the whole field. Of course this will require a multitude of investigators to carry it through if it ever could be completed, but on the other hand a few could plan the scheme, devise the system of tabulation and notation, and then the results obtained by investigators everywhere would contribute to its development.

I trust that what I have set forth may have interested you sufficiently so that the influence of this society may be exerted toward bringing it to pass, for if it should prove that the George Washington University had undertaken the systematic investigation of this important subject and that it had enrolled graduate medical students who were engaged in such researches it would be an additional factor in fixing it among the leading universities of the world, and would contribute most valuable aid in the advancement of medical science.

THE PREVENTION OF TUBERCULOSIS.*

By W. P. Carr, M. D., Professor of Physiology and of Clinical Surgery.

The great prevalence of tuberculosis is so well known that little need be said on that subject. It is an established fact that one-seventh of all deaths are caused by it. All persons are exposed to the contagion and it would hardly be an overestimate to say that nine-tenths of all persons living in this country contract the disease at some time in one or more of its various forms. Indeed, if we consider slight involvement of glands, tubercular ulcers, and other minor manifestations, this estimate is too low. It would seem, therefore, a great boon to humanity if its ravages could be stopped or even checked in a marked degree. Certain facts, however, tend to show that the benefits to be derived from abolishing tuberculosis would be to a greater or less extent offset by evils. Considering the matter from a purely scientific standpoint we are forced to admit that at the present day the tubercle bacillus is the greatest factor in nature's great improvement scheme, "the survival of the fittest."

Tuberculosis is a disease from which the strong are immune or recover and from which the weak die. The great number of autopsies made in recent years has proved this fact beyond cavil. The frequency with which scars of healed tubercular lesions are found in autopsies upon those dead from other diseases has been noted by all pathologists. Dr. Shute and Dr. Phillips will tell you that nearly every cadaver used in the dissecting room of our school, no matter what the cause of death, shows some tubercular lesion or scar. Many of these lesions have been healed or arrested.

A vigorous man, even when he has contracted the disease in a severe form, will recover if given at all favorable conditions. The vigorous, however, do not contract the disease unless temporarily debilitated or unless exposed continuously to excessive numbers of the bacilli.

It is quite certain that the persons saved by eradicating the bacilli would be weaklings. Many of them would be saved for lives of suffering and for the propagation of still weaker offspring. The weaklings, particularly the poor ones, having to struggle for the bare necessities of a life devoid of recreation or pleasure, would gain little by being saved from a consumptive's grave. And the majority of the weaklings are poor, made weak by the conditions of poverty. Child labor, poor food, the cruelty or neglect of vicious or drunken parents, unhygienic habitations, long hours of labor in shops or factories, crowding, insufficient clothing, ignorance and many similar causes produce weaklings among the poor, while excesses and indulgences are the chief factors in their existence among the rich, where they are comparatively few in number.

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*Read March 17, 1906, before The George Washington University Medical Society.

In the fierce competition of the present day in all pursuits of life, even the strong have little leisure, and the life of a poverty-stricken shop-girl or factory-hand affords so little pleasure and so much suffering that it hardly seems worth saving unless we can at the same time make the individual so strong that work will not mean pain.

But we must remember that most of those we would save by abolishing the germ of tuberculosis would be saved for a more lingering and painful death by other diseases. The tubercular patient is notably cheerful and hopeful. It seems as if nature had created the tubercular bacillus as a sifter of her creatures, to sort out and destroy those whose low vitality would render life to them more painful than pleasureable and that she had armed this germ with a poison having decided analgesic and pleasureably intoxicating poperties. Without the tubercle bacillus these poor creatures would be condemned to a life of toil and dyspepsia, chronic catarrhs of the stomach and intestines, and a host of other painful and melancholic diseases that have no germ with analgesic properties.

I think that physicians in their desire to save life sometimes forget that death is not the worst evil that may befall a man. If we cannot put him in such health as to enjoy his life, as to derive from it at least a little more pleasure than pain, we confer a doubtful favor by saving him. And if we save a man from death by one disease for a more lingering death by a more painful disease we surely confer no boon. Is it worth while then to try to stop the ravages of consumption? Decidedly, yes! If we can do it in the right way. Decidedly, no! If we undertake it in the wrong way. The right way is nature's way. Strength means natural defense against the germ. Make the people strong enough to be immune. Abolish those things that produce weaklings and attack the germs only when they become aggregated in such numbers as to threaten even the strong.

But first let us take a look at the wrong way now advocated by many and threatening to be forced upon us by legislation, by the politicians, lay and medical. The attitude of these gentlemen, I may remark in parenthesis, is, to say the least, ungrateful; and the position in which they would place the medical profession certainly undignified. The politician in smooth and oily language of copious and subtle diction speaks in honeyed tones of the noble work of saving life, and asks the doctor's moral support and even his financial support. Translated into ordinary English his harangue is simply this: "Here, you medical men! You say you have found a way to check consumption. Now do it. Do it to the limit, or I will fine you. And, by the way, you must do it my way, not yours. Report all your cases to me that I may supervise you, or I will fine and imprison you. And, yes, you may contribute some of your wealth to support some of my charitable institutions. You don't have to do this, but I will see that you look mean and niggardly if you don't. I also ask you to endorse these measures fully and unconditionally." It would seem more modest in the politician if he should offer to assist the doctor by placing at his disposal facilities for carrying out necessary precautions in the care of poor patients. Especially when the doctor has established dispensaries everywhere for the treatment of the poor and does not need a spur to make him do his best all along this line.

The compulsory reporting of tubercular cases to municipal authorities looking to the enforcing of measures for stamping out the germ is now the vital issue. I think it can be clearly demonstrated that legislation in this connection would be, first, inefficient; secondly, that it would work great hardship to many poor patients; thirdly, that it would be a waste of money that could be otherwise used to good advantage, and, fourthly, that if it could be made effective it would deteriorate the whole human race, but this, fortunately, is impossible. The inefficiency of such legislation is demonstrated by the following facts:

(1.) The chief factor in the scheme is to be the sending to each patient printed rules to be followed so that he may not spread the germ. So far some thirty-one rules have been devised. These rules are so cumbersome and obnoxious that no patient is likely to follow them unless a special officer is detailed to watch him individually day and night. This would require two special officers for each patient. Even then we must remember that a diagnosis must be made before the case could even be reported and that there are thousands of cases not sick enough to call a physician, which are undiagnosed and which are each scattering millions of germs, enough to keep up an abundant supply even if all cases that came to physicians were quarantined. Even when a patient comes to a physician it is often a difficult matter to make a positive diagnosis, at least for a long time. And under such circumstances a physician would have to be very certain of his diagnosis or serious consequences might befall him. Besides, many domestic animals and, perhaps, birds contract tuberculosis and spread the germs. So that even if at great expense all diagnosed cases could be made to follow the rules, it would be like trying to sweep back the ocean tide with a broom. But it may be said that this is only theory and the the "Proof of the pudding is the eating thereof." Statistics in cities where the plan has been tried are said to show great reduction in the number of deaths and cases. New York statistics show a reduction of 40 per cent. I am surprised that no more is claimed on paper. Dr. Nicholas has investigated these statistics and finds that nearly all the so-called reduction was before the compulsory reporting began, and that in our own city there was a greater reduction during the same period without any legislation. The apparent reduction in the death rate from tuberculosis has been generally paralelled by a similar rise in the death rate of pneumonia, and no insignificant factor in this phenomenon has been the attitude of insurance companies in refusing payment in cases of death from consumption.

Hardship to the poor will surely follow such legislation or any widespread exploitation of tuberculosis as a contageous disease. Every narrow-chested individual will become an object of suspicion. Suspected employes will be discharged and be unable to obtain employment again, even though they have families to support. Again, the statistician says: "No, this will not occur. It has not occurred where the plan has been tried." I have only to say in reply that it has occurred, to my personal knowledge, in several instances in this city, following the comparatively slight agitation of the subject of tuberculosis that we have had. The government should be prepared to take care of such persons and families as they legislate out of employment. Even without assuming the care of such families and without making the scheme effective by employing two officers to watch each tubercular patient, a considerable amount of money would be needed to pay for printing and the salaries of officials. This money could be much more effectively used in many ways, such as the disinfection of badly infected houses, or the establishment of country homes for tubercular invalids. In view of the foregoing facts, it seems plain that the eradication of the bacillus of tuberculosis would work more evil than good and would result in a deterioration of the human race as a whole and would considerably increase the financial burdens of the government.

Fortunately, it is an utter impossiblity to eradicate the germs or to make any perceptible diminution in their number, except where they are unusually abundant in rooms or houses long occupied by consumptives in the later stages of the disease. Such rooms or houses should be reported to the health officials and be disinfected by them, for such concentrated accumulations of the germs are dangerous even to the strong. There are few physicians to-day who are not competent to treat tubercular cases and to use all available preventive measures. And the physician who has charge of a case has more interest in carrying out these measures and more influence with the patient in making him do his part than a strange official would have. Evidently little can be accomplished by direct warfare upon the tubercular germ, but tuberculosis can be eradicated and will some day be eradicated by fighting the disease in nature's way. Its eradication in this way will be followed by none of the evils above mentioned, because nature's way is to make the weakling strong so that he can laugh at the germ. This may seem quixotic, but is really more feasible than the method of attacking the direct germ and, vastly more economical in the end.

I can only hint at the steps by which this germ is to be eradicated. One of the most important things will be provision for the proper care, feeding and hygienic surroundings of poor children. We must begin with the children and make them healthy adults. The rich will need no attention, they will look out for themselves when the way is made plain. A way will be found to prevent the crowding of paupers in cities. They will be kept scattered in rural districts and the weaker ones provided with suitable out-door rural occupations. This may be done largely by allowing in cities nothing but light. roomy, hygienic buildings and by requiring landlords to refuse rental in cities to such paupers as would fall easy prey to the bacilli, and by offering them cheap sanitary dwellings in healthy suburbs. Transportation is becoming so cheap and rapid that many are even now finding it more pleasant and more economical to live in a healthy place outside of the city in which they work. All the numerous laws in relation to dairy and food inspection are in the right direction and are constantly tending to limit tuberculosis both in cutting out inspected food and by increasing health and resistance. Nearly all the necessary steps have been inaugurated already in some degree. It is only necessary to improve and perfect them to produce a wonderful improvement in the physical condition of the poverty-stricken classes, which are garden soil for tubercular germs. Physicians will take care of the well-to-do and carry out preventive as well as curative treatment. The great need is for money to take care of indigent children and for disinfecting dangerous dwellings. This may be furnished by charitable individuals or by the state. It seems to me a proper field for state aid and the important point upon which legislation is needed.

My main object, however, is to make plain the two plans of attacking the disease, and to demonstrate the fact that by abolishing the germ in the present condition of city life we should add enormously to the helpless invalid class and lower decidedly the physical standard of the race; that we should simply prolong and increase the suffering of many indigent persons. On the other hand, if we can first increase the resistance of these individuals nothing but good can result and a great diminution of the tubercular cases will follow. Of the two things, I think also, the latter is far more feasible and easy of accomplishment. By fighting the germ at present we are simply wasting time, energy and money that would be well expended in benefiting the condition of the poor. The time may come when by elevating the standard of resistance we have so far reduced the number of cases that a direct attack upon the germ may be profitable and lose its objectionable features. I hope that time will come; I believe it will come. But it is not yet.

A CASE OF LONG STANDING (NINE YEARS), FULL-TERM ECTOPIC PREGNANCY.*

By J. Wesley Bovée, M. D., Professor of Gynecology.

Ectopic pregnancy is by no means rare. About 5 per cent of the gynecologist's abdominal sections are made for this condition. About four per cent. of the sections for ectopic pregnancy are made for full-term cases. This is the oldest case of my experience.

The history is as follows:

Mrs. J., white, 30 years of age, was admitted to Columbia Hospital, in March, 1898. During her childhood she did not enjoy good health. Menstruation began at fourteen years of age, was irregular for the next few years, menstruating but two or three times annually, later became quite regular for a few months and then for a number of months at a time would be conspicuous for its absence.

This irregular interruption of the flow for months has continued to the present. Living in a malarial region, she has suffered more or less from malarial poisoning all her life, and this, with measles and other slight diseases, has kept her in bed a great deal. All during her premarital menstruating life she was very much annoyed with leucorrhoea. She was married at eighteen, and three or four months later had an abortion, which was attributed by her physician to heavy lifting. Her health continued about the same, and twelve months later she was delivered of a female child after a short and easy labor. No physician was present. Previous to its birth her face, eyes, feet and genitals were swollen. There was nothing of note in her condition until about December, 1888, when she began to have severe pains in the left inguinal region and left hip. A "knot" appeared in this region and gradually increased in size; a little later foetal movements were felt, and she expected to be confined in August, 1889. August 1, her physician wrote, "she was in labor, after having all the symptoms of pregnancy, and when I saw her, August 15, 1889, a diagnosis of extra-uterine pregnancy was made and the patient advised to call a surgeon." The pains continued about three months, after which period they gradually became less, but occurring with relapses sufficient to keep her in bed. Three years ago, she gave birth to a live child, and during this pregnancy seemed to suffer no more than previously, and the labor was short and much easier than the first, eight years before. During the following year, the patient enjoyed better health than before, but at the end of that time had another relapse and "was just able to drag around." Her weakness increased, and two months ago she was obliged to remain in bed and was bed-ridden when admitted to the hospital. Two weeks ago, she experienced great pain in the rectum and her physician removed therefrom the left parietal bone of a foetus, which she brought to the hospital. She has been obliged to take quite large doses of morphia at regular intervals during the past few months, and is clearly a victim of it. She is greatly emaciated, suffers constant pain, and is extremely sensitive to pressure in the left iliac region.

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*Read November 18, 1905, before The George Washington University Medical Society.

An examination reveals the presence of a tumor in the left side of the abdomen, extending from the vagina to the spleen, and firmly fixed. A finger in the vagina elicits a sense of crepitation in the mass so easily felt in the left broad ligament, slightly in front, which is thought to be a foetal skull.

On March 10, an operation was performed. The vaginal route for removal was rejected, unless an abdominal exploration determined it to be the preferable one. When the abdomen was opened the dense mass was found to be lying behind the peritoneum, and an attempt to reach it by an incision through the extra-peritoneal structures in the flank was made and abandoned, as too much dissection seemed necessary and the liability to open the peritoneal cavity too great. An attempt to stitch the peritoneum covering the sac to the edges of the abdominal incision was met with failure, and we decided to pack gauze about the abdominal incision and all about the point in the sac wall elected for its opening. The sac was then incised, and from it, after long, tedious efforts, the skeleton of a foetus, one or two bones at a time, was detached and removed with considerable quantity of faecal matter. No other parts of a foetus was found and no evidence whatever of a placenta was detected. The head was found near the spleen, and the relation of the bones with the wall of the sac rendered great care necessary to prevent puncturing the peritoneum. The skin and peritoneum of the edges of the abdominal incision were united with running catgut suture, and the edges of the sac wall were, in turn, stitched to the edges of the abdominal opening. It was now irrigated and packed with iodoform gauze around a rubber drainage tube. Two quarts of physiological salt solution was run into the abdominal cavity to be absorbed. The opening (or openings) between sac and bowel was not found or searched for, and, as expected, the bowel movements came through the opening of the sac for nearly two weeks, after which time it began to come through the anus and the fistula to close. "Scarcely any fecal matter comes through the opening, but quite a little pus" is noted on her history chart for April

1. April 10, is gaining rapidly, taking on flesh and color, and walks about the ward free of pain, although she has had no form of opium since the operation. She left the hospital for her home in May in better health than during the previous eight or nine years.

This woman suffers from a ventral hernia at the site of the drainage but dreads another operation and probably will never have it performed.

In presenting this specimen and its case history a few words concerning such conditions may not be amiss. Albucasis, an Arabian physician, living in Spain, is said to have been the first to clearly report a case of octopic gestation. About the middle of the eleventh century he saw parts of a foetus escaping by the process of suppuration, through the abdominal wall of a woman. During the sixteenth century Platerus, Horstius, Polinus, and Primerose reported fairly well authenticated cases. Those of Nufer and Christopher Bain, both classical, occurred about this time. It is probable that Nufer was the first to make an abdominal section for this condition though his operation is put down in literature as the classical first Cæsarian section on a living woman. The report of it appears in the collection of Casper Bauhin, and is recorded in Von Siebold's History of Obstetrics (Versuch einer Gesch. de Geb. Berlin, 1845, II, 95.) as follows:

"According to the relation of Casper Bauhin, in his appendix to the Latin translation of Fr. Rousset's writings upon Cæsarian section, Jacob Nufer, a swine-spayer, at Sigerhausen, in Switzerland, in the year 1500, delivered his own wife by opening the abdomen, and the operation proved successful for both mother and child. The woman was pregnant for the first time, and when labor came on and she had already suffered severely for several days, there had gradually assembled at her bedside thirteen midwives and several lithotomists. But all of them together were unable to relieve the poor woman of her child or to mitigate her suffering. Thereupon, the husband of the woman proposed to resort to the last means of saving her, and assured her that if she would take his advice he hoped, by the blessing of God, to bring the case to a successful issue. She gave her full consent, and Nufer persisted further in having the permission of the magistrate to his attempt. This, after some reluctance, was eventually obtained. Nufer next asked those of the midwives who had sufficient nerve for it to assist him in the delivery of his wife, while the more timid ones were requested to leave the room. Eleven of them chose the latter course, while two of them and all of the lithotomists remained to assist. The husband first besought the help of the Almighty, then closed the door, laid his wife upon a table and made an incision in her abdomen in the same way he was accustomed with the swine. He opened the abdomen so cleverly at the first incision that the child was safely extracted. When the eleven midwives outside the door heard the baby cry they desired admission, but this was refused until the baby was washed and the wound closed as in the swine. It healed rapidly. She was later confined four times and bore twins. The child delivered by the operation lived seventy-seven years."

Forty years later, according to Donatus, Bain's abdominal operation was deliberately done for the removal of a long-retained foetus. It is described as follows:

"In April, 1540, at Castrum Pomponii, commonly called Pomponischi, in the Province of the Lords of Gonzaga, not far from the river Po, there lived a woman whose name was Lodovica; but from her great size termed La Cavalla. She had been pregnant and the foetus had died in the uterus, while the soft parts had sloughed through the vulva and the bony portions had been retained within her. She recovered and again became pregnant, followed by a rapid loss of flesh, and was reduced to a condition of great danger. Christopher Bain, a traveling surgeon, happened by and offered to attempt to restore her for ten golden pieces if successful, and her body if she died. She and her relatives were very poor, and most of the money was raised by their good neighbors. The woman was tied up; he slowly cut through the abdominal wall, including the peritoneum, and at last opened the uterus and extracted the skeleton of a male child; he washed out the uterus with some warm wine and aromatics, and after cauterizing the edges of the wound, closed it with a suture. She recovered and in a short time had other children born in good condition. Later she had four in all. Witnesses: Dominus John Baptist Zorzonus, and Alexander Begher, Dominus Frederick de Filini, and Dominus Leonellus Zorzonus, and Antonius Maiochus or Mazzuchinus, and several others, present at the whole operation."

This operation was probably for an ectopic gestation, and was done fifty-four years before that of Primerose. About this time Platerus did his operation successfully (1594). In 1604, according to Webster, the first case of tubal pregnancy was reported by Riolanus, the younger, and the same author regards the first case of ovarian pregnancy reported to be that of Mercurus, in 1614. But of abdominal pregnancy the first good account is by Josephi, in 1784, and the first clear description of interstitial pregnancy was by Dionis, in 1718. To Madame Lefort belongs the credit of having first reported clearly, in the eighteenth century, a case of developed ovum between the layers of the broad ligament, a condition that in 1836 was called by Dezeimeris "Subperitoneo pelvic" pregnancy. Lawson Tait's investigations led to the determination that practically all cases of extra-uterine pregnancy are originally tubal, becoming other varieties, often, by escaping from the tube. His views on this subject are generally accepted by the profession.

It is interesting to note that most early writers considered the foetus had escaped from the uterus, and gave histories of injuries at some date during the pregnancy that had caused much extrusion. Altogether, the study of these early cases is very enchanting.

The longest period we found mentioned during which a foetus had been retained in the abdomen of its mother was fifty-seven years (Nebel). Sappey reported one of fifty-six years, and we found nine others of more than fifty years; six between forty and fifty years; ten between thirty and forty years; and forty-three between eight and thirty years, beside a considerable number in which autopsies on aged women revealed the presence of dead foetuses in various stages of decomposition, and without histories of such pregnancies.

The condition of the foetus in ancient ectopic pregnancy is variable, being apparently but slightly dependent on the time it has existed. Bayle removed postmortem from a woman's belly a foetus in good state of preservation that had been there twenty-six years, and Watkins one forty-four years old that was loose in the abdomen and perfectly well developed and preserved. Per contra, many cases are found in which trouble is caused by putrefaction, septic infection, sloughing into hollow viscera, or other depressing condition, within a very short time after the death of the foetus.

It would seem that the duration of retention of an extra-uterine foetus of advanced development depends largely upon whether the conception product becomes infected. The limit of time during which these foetal cysts may remain in the abdomen unmolested has not been determined, inasmuch as in a number of the very oldest cases death was due to some entirely irrelevant cause. In about 76 per cent. of the cases (Charpentier) infection occurs, and nature attempts to eliminate the foreign material and is oft-times successful, although in a large majority of them, if unaided by surgery, the women die o exhaustion as a result of pain, long profuse discharge, or sepsis. In the remainder, about 20 per cent., the foetus remains either in a fai state of preservation or changed by fatty degeneration, absorption o soft parts, calcification of the sac wall, or other metamorphosis. A tru lithopaedion of the foetus does not form. Elimination, when attempted, is in about half the cases into some portion of the bowe nearly as often through the abdominal wall at some point, far les frequently through bladder or vagina, and in one case through th perineum.

Location of Foetus.—Various authorities have insisted that nearly a cases of full-term ectopic gestation are intra-peritoneal. This is not readily reconciled with the preponderance of evidence going to prove that absorption of a young ovum placed in the peritoneal cavity progresses rapidly. Taylor and Webster agree that abdominal or intra-peritoneal gestation is uniformly fatal (unless removed by abdominal section), primarily by hemorrhage, secondarily by suppuration of the sac and peritonitis. Of course, the amount of hemorrhage may be so slight as to cause no alarm, and is usually least when rupture is near the fimbriae. Again, the foetus may escape in its unruptured membranes into the peritoneal cavity, the placenta preserving its attachment to the inner surface of the tube. Webster, Taylor and others have recently published views directly antagnotistic to this belief, and the author believes that while it is possible to retain a foetus sufficiently long in the Fallopian tube for its arrival at such a stage of development that when suddenly expelled into the peritoneal cavity it will resist absorption, and that intra-peritoneal pregnancy may occur without passing through the broad ligament, but that practically all full-term ectopic gestations are, or have been, broad ligament pregnancies. Either the pregnancy develops and remains extra-peritoneal, bulging either the anterior or the posterior fold of the broad ligament, or has finally ruptured through the peritoneum into its cavity. The case herein reported, and one we previously recorded, were unquestionably extra-peritoneal. Dunning's interesting case was of this variety, and many of those reported during the past few centuries were clearly proven to be of this type. It is probably those old cases that opened into the bladder, vagina, or peritoneum, or into the bowel, as did the one herein detailed, are of this variety, and even some of those opening through the lower part of the abdominal wall may have dissected up the anterior layer of the peritoneum, and here escaped without even having invaded the peritoneal cavity.

Pregnancy and Labor During Ectopic Pregnancy.—Another interesting feature of the case herein reported is that while in possession of the old ectopic gestation the woman again became pregnant, and was delivered of a living child after a very easy labor. This interesting condition has occurred in at least quite a large percentage of cases we have studied, and even in a few instances two different estopic pregnancies have been found at the operation or autopsy. These were usually of different stages of development, being either of the same date, and one becoming blighted first, or altogether different as to age.

Treatment.—Parry and others of the early writers on the subject of full-term ectopic pregnancy have been opposed to surgical assistance except when the life of the woman was clearly in immediate danger. But that was before surgical invasion of the peritoneal cavity was so safe as it is now, and the views expressed have been gradually tending toward surgical relief as the routine treatment for this condition. The principal cause of death in abnormal section for these advanced cases is sepsis. It would seem that if the large majority are extra-peritoneal, many of them would not require celiotomy. However, if a transperitoneal operation be necessary, then treatment of the sac by stitching it to the abdominal wall before opening it, or when not possible, afterward, would be the most approved plan of procedure when the sac cannot be enucleated.

When much denudation of tissue in the pelvis results from cystectomy, then drainage through the vaginal roof will be advisable. Although the operation may be done thoroughly aseptic, if, in these greatly weakened women, a space is left in which accumulation of fluids may exude, we must expect its infection before absorption of it occurs, and a considerable loss of life to result.

A MORE LIBERAL DIET IN TYPHOID FEVER.*

By Thomas A. Claytor, M. D., Professor of Therapeutics and Clinical Medicine.

This subject has been approached with some hesitancy for two main reasons: First, the profession, as a whole, is strongly opposed to more liberal feeding in enteric fever, and one who advocates it runs the risk of sacrificing, to some extent at least, the confidence which may have been reposed in him by his brother physicians; second, an argument in favor of a more liberal diet might be misconstrued into one for too full a diet, and thus do harm.

I wish to present to you the results in a small number of cases, twenty-six in all, which I have treated on a more extended dietary during the past year. The results have been no better, as far as ultimate recovery goes, than in cases treated with a more restricted diet, but my patients have been far more comfortable, happier, and have, I think, convalesced more promptly.

The treatment, dietary and otherwise, of all diseases has changed from time to time, but it must be acknowledged that typhoid fever, from the days long before it was separated from other continued fevers (1813-1837) to the present time, has been rather a notable exception. Following the precepts of Hippocrates, Galen, Celsus, and a long line of distinguished physicians urged a very rigid diet during the acute stage of fevers, consisting chiefly of barley water and the like. In the latter half of the seventeenth century the teachings of Thomas Sydenham, who followed a vigorous antiphlogistic plan, had a strong influence on the feeding in continued fevers. Water-gruel and barley-gruel represented his dietary with the addition of a few spoonsfuls of broth several times a day. During the eighteenth century and the early part of the nineteenth, the diet became more liberal but was exclusively vegetable. Farinaceous gruels, fruit juices, and soft fruits were allowed. Very restricted diet prevailed, however, until the time of Graves of Dublin, whose influence was felt in the latter part of the first half of the nineteenth century. He was considered to have very liberal ideas as to feeding in fevers. He recommended well-boiled gruel with sugar and lemon juice or panada, of which a spoonful was given every third hour. In France, Brossais, arguing from the basis that all febrile conditions depended upon gastrointestinal irritation, urged a most rigid diet in fevers. The doctrines of Brossais were attacked by Trousseau, Herard, Monneret and others, and were finally overthrown in 1857.

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Milk did not come into favor until the last third of the past century, but since that time it has been almost the sole dependence in typhoid fever.

It would appear from the foregoing that there has been a gradual, very gradual, tendency to increase the amount of food given in continued fevers ever since the time of Sydenham, and I should not be surprised, if in less than fifty years, those looking back over our exclusively milk diet will feel much the same sympathy for our patients as we feel for those poor fellows of not so long ago who, though parched with thirst, were allowed little or no water. The argument advanced by the advocates of the milk diet is, that, on account of the inflamed and usually ulcerated condition of the small intestine in typhoid fever, liquid food should be given. They seem to forget that milk ceases to be a fluid the moment it reaches the stomach, and that all food which is properly prepared and digested reaches the ileum, the most common seat of greatest inflammation, in a more or less fluid form. In view of the latter fact it would seem that the food in typhoid fever only needs to be finely divided and digestible, and to be accompanied by a sufficient amount of water. E. K. Herring puts it rather aptly when he says, "It should be free from strings and stones and skins and bones."

It has been proved experimentally that the digestive and absorptive powers, during typhoid fever, fall off for only five to ten per cent, so that impaired digestion is not sufficient argument in favor of milk alone.

It has long been recognized that typhoid fever is a general infection, the bacilli having been found in practically all the tissues of the body; the intestinal lesions, therefore, are by no means the whole matter for consideration.

Curschmann's analysis of the causes of death in 580 cases of typhoid fever (Nothnagel: "Encyclopedia of Practical Medicine") shows: Severity of infection, 46.9 per cent; intestinal perforation, peritonitis, 16.5 per cent; hemorrhage, 7.8 per cent. Thus it may be seen that only a little less than half died from the severity of the infection, whereas a little less than one-fourth died from intestinal lesions. Taking these as representative figures, it is quite clear that we have twice as much to fear from the inability of the patient to withstand the severity of the infection, as we have from the intestinal lesions. It would seem equally clear, then, that the first indication is to maintain the bodily vigor at the highest point possible. It has also been suggested by Barrs (*British Medical Journal*, 1897) that starvation would tend to prevent the healing of ulcers in the intestine, in the same way as in similar conditions in other parts of the body. It also seems likely that if the patient were allowed a greater variety of food during the febrile stage, there would be much less likelihood of bad results from indiscretions during early convalescence.

For several years I have been inclined to break through the ironclad rule of almost an exclusively milk diet; so very cautiously and with many fears and misgivings have I done so. So great has been the prejudice in favor of an absolutely liquid diet, as represented by milk with the occasional substitution of animal broth or tea, that the physician is almost afraid to take the risk of suggesting any change, knowing full well that, should anything go wrong he would be held responsible, if not by the patient and his friends, certainly by the profession, because of reckless feeding.

Since typhoid fever cannot be aborted, nor influenced by any form of specific medication, our efforts are directed toward so ordering the general conduct of the case as to avoid complications and to hasten recovery.

The trend of thought of the present day is toward the belief that most diseases are due to specific poisons, and that recovery depends upon, either the exhaustion of that poison, or the development of an antibody of some sort, which renders it innocuous.

It becomes necessary, then, to keep the patient in the best possible condition to withstand the ravages of the disease until such time as recovery shall take place.

Since many are exposed to typhoidal infection who do not develop the disease it is very evident that some have greater resisting powers than others, and it is probably due to this fact that we have not all had the fever. It seems reasonable to suppose that a long attack is due, in part at least, to the inability of the individual to overcome the poison. Therefore, we should do all we can to develop the resistive power, or in other words, to keep up the strength of the patient. To accomplish this end we must give sufficient food. Now it is almost impossible to give milk alone in sufficient quantity to supply the needs of a man through a long illness, even though it comes nearer to being a perfect food than any other article.

Voit's table shows that the normal man of an average weight of seventy-five kilos (150 to 165 pounds) doing a moderate amount of work requires a total food value of 3,000 calories per day to maintain the body in good physical condition. It has also been estimated that the body at rest requires 2,300 calories. Now the man suffering from typhoid fever would certainly require a larger food value than the man at rest because of the greater energy evolved in fever, if from no other cause. This excess would be hard to estimate accurately, but it has been placed at 500 calories, which would bring the total food value requirement up to 2,800 calories, for a patient suffering from typhoid fever.

Now if 180 c.c. (six ounces) of milk, representing 200 calories, be given every two hours day and night, the total food value would, in twelve feedings be 2,400 calories; but few patients are wakened every two hours for food, so that nine feedings, at most, would be given, representing but 1,800 calories. Thus it is readily seen that the usual exclusive milk diet falls short by 1,000 calories, more than one-third of the supposed requirements.

Chittenden's experimental work in physiological economy has apparently proved that, so far as those in health are concerned, a food value of 2,000 to 2,500 calories, representing about half the nitrogenous food previously supposed to be necessary, is quite sufficient to maintain a perfect bodily and mental equilibrium. Of course this new scale rather throws doubt on all former calculations as to the bodily requirements in health and to some extent also in disease. But aside from all economic calculations it is well known that an exclusively milk diet, six ounces every two hours, does not satisfy the craving for food. We also have the most practical evidence of insufficient nourishment in those suffering from typhoid fever in their enormous loss in weight. Of course we recognize the fact that no matter how carefully we feed these patients there will surely be a loss in bodily weight, but it need not be so great.

In selecting a diet for typhoid fever patients the following important points should be borne in mind: It must be highly nutritious; it must be easily digested; it must be innocuous; it should be palatable. The food must possess sufficient nutritive value to maintain, as far as possible, the bodily equilibrium. Since the digestive functions are likely to be somewhat impaired, the food must be of such a kind and so prepared as to throw as little extra work upon them as possible. The food must be innocuous. Neither by its coarseness, bulky residue, gas-producing or other properties, should it tend to cause the serious complications of hemorrhage and perforation. Outside of the comfort and pleasure which palatable food affords the sick man, Pawlow has shown that it has an important bearing on its digestibility.

It has been my custom of late to begin the treatment of a case of typhoid fever, no matter on what day of the disease it may come under my care, with the regulation six ounces of milk every two hours, night and day while awake. Animal broths are given in place of milk, to vary the monotony for those who can take milk, and as a substitute for those who cannot. Each day, after the subsidence of the more acute symptoms, such as headache, I ask the patient if he is hungry, and as soon as he replies in the affirmative a soft-boiled or poached egg is allowed, and if well borne, the number is gradually increased to three or more a day. The next additions are jelly or blancmange, custard, soft toast, the carefully selected soft part of baked apple, or rice which has been boiled four hours. The last to be tried are scraped beef or chop, very finely divided chicken and baked potato, the latter only when digestion seems specially good.

I do not want to be understood as advocating so full a diet in every case, but each case should be studied individually, and when, from the condition a more liberal amount seems advisable, it should be given.

I cannot but believe that most of the foods mentioned are quite as digestible, far more palatable, and less likely, if anything, to cause perforation or hemorrhage by their local action or gas production than milk. It is well known that milk often produces tympanites, that it leaves a large residue after digestion, and is more likely to cause impaction than almost any other food. Often in typhoid fever large curds are detected in the evacuations. It is then customary to reduce the already insufficient supply of milk by further dilution. Why not try something else?

Before analyzing my tabulated list I would like to call attention to one case whose unusual severity has materially raised the averages. This woman had fever for 97 days, was in bed 127 days, and in the hospital 135 days. Of course such a lengthy illness is uncommon, but it must be included.

In the deduction of averages I have disregarded small fractions as immaterial.

I wish to thank Dr. Homer Fuller, late resident at the Garfield Hospital, for having taken from my histories the data in this table.

Case No.	Day of Disease on Admission.	Day of Disease. Temperature Normal.	Day of Disease. Out of Bed.	Total Hospital Days.	Relapse.	Hemorrhage.	Delirium.	Highest Temperature.	Widal Reaction.	Complications.	Result.
No. 1...........	15	63	67	71	No	Yes	Yes	104.6	Pos.	Hem.	R.
No. 2...........	9	44	54	55	"	No	"	104.6	"	Delir.	R.
No. 3...........	3	31	40	50	"	"	No	104.8	"	No	R.
No, 4...........	2	32	40	49	"	"	"	103.8	"	"	R.
No. 5...........	5	45	61	63	"	Yes	"	105.6	"	Hem.	R.
No. 6.....	4	41	55	56	"	"	Yes	105	......	"	R.
No. 7...........	6	31	42	46	"	No	No	103.6	......	Pleur.	R.
No. 8...........	6	97	127	135	Yes	Yes	Yes	105	Pos.	Hem.	R.
No. 9...........	4	20	39	46	No	No	No	104	"	No	R.
No. 10...........	7	61	55	82	Yes	"	"	105.6	"	"	R.
No. 11...........	6	44	54	53	No	"	"	105.6	"	Pleur.	R.
No. 12...........	15	36	50	35	"	"	"	105	"	No	R.
No. 13...........	6	57	58	63	"	"	"	104.2	"	Osteom.	R.
No. 14...........	7	20	40	41	"	"	"	102.8	"	No	R.
No. 15...........	10	29	39	32	"	"	"	104.4	"	"	R.
No. 16...........	5	24	38	41	"	"	"	104.2	......	"	R.
No. 17.....	9	47	61	56	"	Yes	"	104.8	Pos.	Hem.	R.
No. 18...........	15	43	39	30	"	No	"	102.8	"	No	R.
No. 19...........	5	9	22	20	"	"	"	102.6	"	"	R.
No. 20.....	22	53	73	59	"	"	Yes	106	"	Delir.	R.
No. 21...........	6	11	22	18	"	"	No	104.2	"	No	R.
No. 22...........	8	16	30	27	"	"	"	103.4	"	"	R.
No. 23.......... .	3	24	39	48	"	"	"	104.4	Part	"	R.
No. 24...........	3	44	53	85	"	"	"	105.2	Pos.	"	R.
No. 25...........	3	38	48	45	"	"	"	104	"	Phleb.	R.
No. 26...........	1	51	61	31	"	"	"	104.2	"	No	R.
Average........	7	39	50	50	2	5	5				

Of these 26 cases all recovered. The shortest duration was 9 days, the longest 97, the average 39; the earliest day on which a patient was out of bed was the 22d, the latest, the 127th, the average the 59th. The shortest stay in the hospital was 18 days, the longest 135, the average 50.7. (The last figures, relating to the number of days in the hospital, are of no value, as the date of admission was in some cases very late, while others left before they were completely recovered.) There were two relapses; in five cases one or more hemorrhages occurred, but in only one instance, as it happened, had an exclusively liquid diet been exceeded before the occurrence of hemorrhage. Delirium was present in five cases. Other complications were not more numerous than usual except pleurisy, which was twice recorded.

While I know that twenty-six cases form far too small a number from which to draw conclusions of any great value, yet it is my belief that the careful personal observation of even a few cases should be recorded, for it will require the weight of evidence of many clinicians to shake the implicit faith of the profession in the exclusive milk diet.

From my own experience I am prepared to say that the more liberal diet is certainly not deadly; if it possesses no special advantages neither does it show special disadvantages. The advocates of the more liberal diet, among whom I take my stand, claim that the patient is more comfortable; that the attack is slightly shortened; that convalescence is more prompt, and that neither relapse, hemorrhage, nor perforation is more frequent.

The advantage which is most apparent is the increased comfort of the patient. Typhoid fever is at best long and tedious, and we are all familiar with the days and weeks during which our patients clamor for more to eat. The pangs of hunger are much harder than many other discomforts that they are called upon to bear after the first ten days of fever. Now if more liberal feeding does no harm this one advantage—the comfort of the sick man—is sufficient argument in favor of its adoption, but more is claimed.

F. C. Shattuck (*Boston Medical and Surgical Journal*, Vol. 148, 1903) reports a mortality of 10 per cent. in 233 cases on an exclusively milk diet, while the mortality was but 8.45 per cent. on an enlarged diet. Fitz's analysis of the cases of typhoid fever in the Massachusetts General Hospital (*Boston Medical and Surgical Journal*, 1899) shows that the mortality was less in Shattuck's cases, on a more liberal diet, than in those of his colleagues, on a milk diet; and that relapses were 2.9 per cent. less frequent in the liberally fed. W. H. Smith has brought these statistics up to 1902, and shows that in 563 cases, hemorrhage, perforation, and relapse were no more frequent among the more liberally fed.

Shattuck's diet list is about as follows: Minced lean meats, scraped beef, soft part of raw oysters. Soft crackers with milk or broth, soft puddings without raisins, soft toast without crust, blancmange, wine jelly, apple sauce, and macaroni.

Of course the way to become convinced is to try the system, but those who are interested will find instructive articles, besides those already mentioned, by Marsden (*The Lancet*, January, 1900), the late F. A. Packard (*Therapeutic Gazette*, 1900), Murrell (*Medical Brief*, St. Louis, 1900), Morris Manges (*Medical Record*, 1900), and H. A. Hare (*Therapeutic Gazette*, 1904). The latter states that his attention was first called to this matter by an attack of typhoid fever, during which, though he had no appetite, yet he felt underfed. He felt that he was attacked on the one hand by the bacillus of Eberth and on the other that his powers of vital resistance were being reduced by partial starvation. Two of the most thoughtful articles on the subject are by J. B. Nichols (*American Medicine,* Vol. 9, No. 18, and *Medical Record,* 1905). Thayer's translation of Bushuyev's article has attracted wide attention, and although the latter's results were excellent, I am not yet, nor do I ever expect to be ready to advise such a diet for typhoid fever patients as he advocates. It is rather too much on the order of that for a day laborer.

It is far from my intention to speak ill of the bridge which has carried so many safely over, and indeed, from long experience, I have a most wholesome respect for the milk diet in typhoid fever, but I do believe that the pendulum is making a belated swing toward more liberal ideas with regard to feeding.

CIRRHOSIS OF THE LIVER WITH REPORT OF A CASE.

By Thomas S. D. Grasty, M. D., Assistant Professor of Bacteriology and Pathology.

Since 1514, when Versalius, followed by Harvey and Morgagni, first described the hardened condition of the liver, now known as cirrhosis—a term given by Laennec in 1819, who regarded the bile-stained hob-nails as masses of yellow new growth invading the liver, but now known to be islands of liver cells encircled and compressed by surrounding bands of contracting fibrous tissue—many and diversified attacks have been made upon this type of disease and its relation to the human organism. The subject of hepatic cirrhosis is, indeed, vast and is one on which a great deal has been written. Extensive experimental work performed in recent years has changed many of our views both regarding the prognosis and treatment of this disease.

Portal cirrhosis, a disease of late middle life, and usually proves fatal at about fifty years of age, is more common in men than women in about the proportion of five to two.

Experiment has shown that a large number of poisons are capable of giving rise to changes in the liver comparable to those of cirrhosis (often it is true, the lesions are early or at the best not well marked). But the facts are of value as indicating that cirrhosis in man may reasonably be considered as the result of a toxic process. The poisons may be absorbed from the alimentary canal and reach the liver in a comparatively concentrated form or they may travel to the liver by the hepatic artery, in this later event the dose being comparatively dilute as compared with the former. Ordinary cirrhosis in man is generally due to poisons traveling by the portal vein.

Alcoholism is rather an antecedent condition than a "causa vera" and acts indirectly or in an accessory manner, though in ordinary practice the association between cirrhosis and antecedent alcoholism is of fundamental importance; although it is well known that among the Brahmins and other high-cast Hindus, who, as a rule, lead abstemious lives and never touch alcohol, cirrhosis of the liver is of frequent occurrence. The possibility of cirrhosis being definitely due to micro-organisms is one that must be faced; from analogy it is most probable, but at present, as in the case of syphilis it has not been certainly established. It is also highly probable that poisons, or perhaps micro-organisms, reaching the liver by the hepatic artery may give rise to changes of a cirrhosis nature.

As regards the nature of cirrhosis it is in the present state of our knowledge safest not to regard the cirrhotic process as exclusively due either to irritative hyperplasia of the connective tissues, the hepatic cells being quite passive on the one hand, or to primary degenerative or atrophic changes in the hepatic cells with a resulting replacement fibrosis on the other, but to remain content with the view that the irritative poisons leading to cirrhosis affect both elements in different ways and that the resulting change in one tissue may further initiate fresh changes in the other tissue or modify those already existing.

Many classifications have been introduced both clinically and histologically as portal, biliary, hypertrophic, multilobular, mono-lobular, pericellular mixed and sporadic each with many sub-divisions indicative of the most marked changes. These I shall not enter into. Suffice it to say that the size of the liver in ordinary cirrhosis may vary greatly from 30 to 150 to 200 ounces, and it is noteworthy that a cirrhotic liver, which is actually smaller than normal, often weighs as much as a healthy liver, or even more, its specific gravity being much increased. There are also many changes occurring in the gall-bladder, bile-ducts, portal vein, spleen esophagus, stomach, small intestine, pancreas, kidneys, with many associated lesions, it being an established fact that tuberculosis is met with in the bodies of patients with cirrhosis more often than in other non-tuberculous diseases, together with chronic peritonitis, arteriosclerosis, heart conditions, carcinoma, et cetera.

Some writers have spoken of hepatic cirrhosis as a disease which is not strictly limited to the liver but is a part of a general change and in this respect it might be compared to the condition of red granular kidneys, which is a local manifestation of a general vascular change, arteriosclerosis. Portal cirrhosis might in the same way be considered to be a part of a general change in the alimentary system, for the spleen, the intestines and the pancreas commonly show changes in hepatic cirrhosis. Some of the changes are secondary to portal obstruction, but this does not account for the visceral changes and some of them must be regarded as concomitant effects of a general cause, in many cases, alcoholism. As bearing on this conception of cirrhosis as a part of a widespread change in the alimentary system, Klippel and Lefac have pointed out that, in some instances of cirrhosis the changes may be more advanced in the pancreas than in the liver. The secondary relation of cirrhosis to a general cause is also seen in hemochromatosis, where, as a secondary result, cirrhosis of the liver and pancreatic fibrosis may occur.

The course of ordinary cirrhosis may be divided into:—First, the early pre-ascitic stage; second, the late or asitic stage.

The early stage begins vaguely and gradually; the symptoms are mainly those of dyspepsia, often of an alcoholic nature, with loss of appetite and gastro-intestinal disturbances. Epitaxis may occur now and then, but the most important event in the early stage is the occurrence of hematemesis. The liver is generally somewhat enlarged and slightly tender, chiefly due to vascular engorgement.

In the late stage, usually some months or years may elapse before ascites develops. The disease may become latent from the development of compensatory processes. The development of ascites may come on suddenly and when occurring the patient has undergone considerable amount of wasting and shows marked muscular debility. The wasting of the temporal and facial muscles gives a characteristic appearance to the patient, the atrophy of the thoracic muscles shows up in marked contrast to the swollen abdomen, the skin becomes harsh, dry, loses its elasticity, petechiae may develop, while there may be hemorrhage from the various mucous membranes and oozing from the gums. This feature was present to a marked degree in the case which I shall present, his pillow being soiled with bloody mucoid discharge.

The ascites may require tapping once, twice or even oftener, but all authorities agree that in cases of cirrhosis uncomplicated by chronic peritonitis paracentesis is seldom required more than once. (In this respect I would say that the case that I shall report has given no indication of such a condition. Yet, paracentesis has seemed imperative twenty-one times.) The patient emaciates rapidly, loses strength, becomes stupid, drowsy, or even delirious. I should like to emphasize the nervous symptoms, as my patient exhibited them during the course of his disease to a marked extent. During two exacerbations the urine was much diminished, and with the development of slight fever the patient exhibited signs closely simulating cerebral uraemia, intense headache, amaurosis, noisy delirium with resulting stupor, following which for several weeks there remained slow cerebration with some loss of memory.

Portal cirrhosis commonly lasts a considerable time, one, two or more years, usually intervening before the appearance of symptoms due to the liver, if, indeed, their first appearance can be accurately described, and with the exception of Flint, all authorities agree that when acites has developed death usually follows before the patient requires tapping more than twice, unless complicated, as before stated, with some degree of chronic peritonites.

As regards the relief of portal cirrhosis, many remedies and methods have been devised, all having for their object the establishment of a collateral or compensatory circulation. I shall only call your attention to the more recent surgical treatment. The operation of paracentesis is a very simple one with the ordinary surgical technique now at our command and should, in my opinion, be used early, as it is productive of only good results when properly done.

With reference to the more recent surgical treatment, I refer to Talma's operation, or the treatment by the production of vascular peritoneal adhesions. This method, as devised by Drummond and Morrison, was based on the assumption that ascites was due to portal obstruction and was an attempt to increase the collateral circulation between the radicles of the portal vein and the general systemic circulation. The operation was original in Morrison's hands, but it appears that it had been previously planned by Talma and carried out by Vonder Menlen in 1889, Schelkley in 1891, and Leus in 1902. The operation consists, after paracentesis and with the usual technique, in making an incision parallel to the right costal margin, the peritoneum over the liver and diaphragm is scraped or curetted, so as to set up adhesive inflammation and the surfaces are brought together by stitching the round ligament to the abdominal parietes, or by passing stitches through the liver itself. Whether or not the improvement which sometimes results both in the general health and in the local condition simply depends on the collateral circulation relieving the pressure in the portal vein or not, has not been decided, though it appears to me that there are at least two other ways in which the establishment of a collateral circulation in the adhesions around the liver may be of benefit. First, by diminishing the flow of blood through the liver it may enable this organ to deal more satisfactorily with the blood passing through it and so reduce its toxaemic condition. Second, that the presence of vascular adhesions over the surface of the liver would relieve venous engorgement and so allow a freer supply of arterial blood.

As regards the ultimate results of this operation I can only present a few statistics: Kolmskie (1904) collected 168 cases; 46 per cent cured or improved, 49 per cent unimproved, 5 per cent unknown.

Burns (1902) collected cases during the preceding five years; 37 per cent. mortality, 10 per cent. cures, 20 per cent. markedly improved.

In 105 cases collected by Greenough only nine showed improvement after two years.

The history of the case which I wish to present is as follows and exhibits the following unusual features: (1) Long duration of the disease; (2) Number of times paracentesis was required: (3) Apparent recovery of general health with disappearance of ascites for over one year.

E. Y., age 48, American, male, residence Washington, D. C., clerk in Government office.

Family History. Paternal.—Grandfather died suddenly at age of fifty-seven. Grandmother died suddenly of heart disease, age thirty-nine. Maternal—Grandfather dropped dead in January 1888, age seventy-seven. Grandmother died aged eighty, from general asthenia. Parents—Father died at thirty-one years of age from pneumonia. Mother living, has had some cardiac disturbance for years. One sister died of measles, age three years, one brother died when an infant; one sister living, some cardiac disease, very neurotic temperament; another sister living, suffering from neurasthenia.

Previous History.—Birth normal, breast fed, usual diseases of childhood, measles, typhoid fever, etc. Began school at six years, mental development normal. Health during youth and early life good, user of tea and coffee. tobacco not used in any form, alcohol used constantly during past fifteen years with numerous excesses, to great excess during one year. Alcohol not used in any form since July 1903. Denies any specific history.

History of Present Illness.—First symptoms noted October, 1900, when he began to suffer with signs of a chronic gastric catarrh, anorexia, furred tongue, bowels irregular, constipation alternating with diarrhoea, together with some bleeding from gums. Was compelled to go to bed and was unable to perform his daily duties for about three months. Had some abdominal tenderness, distention, was treated by a physician with drugs and the local application of an ointment and condition improved so that he returned to work. Though advised strongly at that time to give up alcohol, patient returned immediately to its use. From February, 1901, to June, 1903, enjoyed fair health, with two attacks of vertigo, falling upon the street during periods of excessive drinking.

In June, 1903, I was called to see him and found his condition at that time as follows: Height, about 5 feet 8 inches. Weight, about 140 pounds. Dorsal decubitus, head raised rather high on pillows. Facial expression dull, intelligent. Body much emaciated, muscles wasted, especially those of face, temporals markedly so, muscles of throacic wall much atrophied, bones prominent, no deformities, ankles slightly swollen. Skin sallow, muddy, dirty in appearance, no discoloration of conjunctivae. Skin over face drawn and thin and shows several clusters of dilated vessels, or stigmata, one on forehead particularly prominent, some also present over lower limbs, stellate in appearance. Skin dry and harsh over rest of body, except over abdomen where veins are distended and skin drawn, shiny and tense. Hair scanty and dry, glands (superficial) not perceptibly enlarged. Has post nasal catarrh with much mucus dropping back into posterior pharynx, expectoration at times, blood tinged, no bronchial cough, lungs apparently normal, with exception of few moist rales over bases posteriorly, respirations increased, rather labored and panting. Heart rapid, no murmurs, pulse regular, though weak, apex beat slightly higher than normal. Lips dry, pale and fissured gums red and spongy, bleeding upon slightest pressure, tongue flabby, furred and dry, slightly tremulous. Throat shows evidence of chronic congestion, deglutition normal. Appetite very poor, thirst excessive, vomits at times, with much mucus. Intestinal digestion poor, bowels sluggish. Temperature 99.6 F. (mouth.)

The physical examination of the abdomen shows abdomen greatly enlarged, measuring 48 inches in circumference, enlargement uniform, umbilicus protruding, tense and shining. Movable dullness over flanks, resonance over umbilicus, distinct wave and thrill felt on palpitation. On deep respiration edge of liver felt distinctly from 2 to 2 1-2 to 3 inches below costal margin, spleen not palpable, veins in region of umbilicus distended. Nervous system negative with exception of some headache and extreme depression. Vision fair, wears glasses, conjunctivae very pale, vessels much distended and injected. Other special senses normal. Kidneys seem to be functionaling normally, urine high colored, contains slight trace of albumen, no casts. Genitals much atrophied.

Progress of Case.—During first few days after my first visit the patient drank large quantities of alcohol, followed by acute delirium, fever, slight jaundice and a marked diminution in the amount of urine which became very dark and high colored. On July 6, '03, paracentesis was performed and about 3 1-2 to 4 gallons fluid removed. Since then to August, 1904, patient was confined to house and bed and was tapped twenty-one times. The intervals at first being from three to four weeks. When distention was marked there would occur some degree of stupor, marked edema of feet, legs and testicles, becoming so great on one occasion as to require multiple incisions in skin with pressure bandages, appearance of hemorrhoids; jaundice never a marked feature, though skin would become slightly icteroid, frequent hemorrhages from gums and throat, some petechial spots over body, with the development of a laryngeal cough, raising much mucus, often bloody in character. After several successive tappings it was found that the liver was decreasing in size, encroaching on the costal margin. During attack of fever mental condition would become very bad, some low muttering delirium with loss of memory, and a desire to repeat the same question, word, or phrase again and again.

During his illness he was seen by three other physicians with me in consultation, all of whom agreed with the diagnosis already made and gave a very unfavorable prognosis. One of them advised that if his general condition did not rapidly improve that a Talma-Morison operation should be done, this, however, was not agreed to by his family.

Since August, 1904, his condition has steadily improved, the ascites never recurring, emaciation, still marked, appetite good. He now spends much of his time in walking and being out of doors.

The ascitic fluid removed gave the following analysis:

(1.) Yellowish color.
(2.) Almost clear, at times slightly bile stained alkaline.
(3.) Specific gravity 1.015.
(4.) Much albumen.
(5.) When placed upon culture media no growth occurred.
(6.) Microscopic examination shows few mono-nuclear lymphocytes.

His physical examination at present shows the existence of no heart murmurs, liver cannot be felt, urine free from albumen and casts, abdomen slightly swollen, measuring now 34 inches. The right side of scrotum much larger than left, though testicles easily felt and is about same size as left.

As regards treatment, he has been given all treatment that I had at my command, purgatives, diuretics, diet, potassium, iodide, Neimeyer's pill, etc., the most satisfactory proving to be magnesium sulphate each morning before breakfast, given in as little water as possible.

Is the patient cured? It is difficult to say that any case is cured, but here is a man, on the point of death from a disease well known as commonly being deadly in its effects, who, after submitting to a certain line of treatment, ceases altogether to show a most dangerous symptom, and rapidly recovers flesh and strength.

Dr. McDonald (in MEDICAL NEWS, 1889) reports a case aspirated 31 times with the removal of 8,600 to 9,000 ounces of fluid, dating from May, 1888, to August, 1889, with apparent disappearance of symptoms and regaining health.

The conditions necessary for such a favorable result are, first, the patient must be comparatively young and his vessels in condition to accommodate themselves to new conditions. And, second, there must be no disease of heart, lungs or kidneys.

In conclusion, I would say that the following features are those to which I would like to call attention as most pertinent in my diagnosis:

(1) age; (2) strong alcoholic history; (3) history of dyspepsia; (4) primary enlarged liver; (5) secondary contracted liver; (6) hemorrhages; (7) ascites; (8) jaundice not marked.

THE RELATION OF MEMBERS OF THE FACULTY OF THE GEORGE WASHINGTON UNIVERSITY TO YELLOW FEVER INVESTIGATIONS.

By H. H. Donnally, A.M., M.D., Instructor in Bacteriology and Pathology.

When the Army Medical School was established in Washington in 1893, Major Walter Reed, of its faculty, was made Professor of Bacteriology and Pathology in our University. This position he filled with credit until his death, nine years later, and many of our alumni, including the writer, remember Dr. Reed with peculiar pride and gratitude because of the personal relation of teacher and student which existed between them.

Dr. James Carroll was elected Assistant Professor at the same time with Dr. Reed, and, upon the latter's death, was made Professor of Bacteriology and Pathology, his present chair. Surgeon-General George M. Sternberg, U.S.A., retired, holds the chair of Preventive Medicine in this University.

In view of the great achievements of these men of science and their vital association with this University, it seems appropriate that the subject of this paper be discussed in The University Bulletin.

The first Havana Yellow Fever Commission was sent to Cuba in 1879. Dr. George M. Sternberg, U.S.A., who for years made systematic investigations into the etiology of yellow fever by bacteriological methods, was a member and secretary of this commission. Sternberg worked independently also in Vera Cruz, Rio de Janeiro, New Orleans and other southern ports. When made Surgeon-General, Dr. Sternberg was obliged to abandon his test tubes and microscope, his task unfinished, but his interest in it unabated, while he had as a result of his work Bacillus X recovered at autopsy from about half of the bodies dead of yellow fever, examined by him. The remarks of Prof. W. H. Welch, of Baltimore, at the banquet in New York City in honor of General Sternberg upon the latter's retirement in 1902, present authoritatively an estimate of Sternberg's work. As reported in Medical News, June 21, p. 1198, of that year, Dr. Welch said that "his work with yellow fever would stand forever. He said it was a common thing in these busy days to forget the steps which led up to any important discovery. All that Dr. Sternberg had done in the study of yellow fever was necessary work and it had to be done in just the way that he did it. The ground had first to be cleared; if it were not so the discovery had not been possible, and later discoverers themselves would have had to hunt out the large host of micro-organisms which Dr. Sternberg had described and laid aside. Dr.

Welch said that his careful work had practically resulted in the view that a bacteriological origin for this disease could not be claimed, and it was on *a priori* grounds that he himself had felt that Sanarelli's bacillus was not the cause of yellow fever. His study of others' discoveries was most careful and most critical; it was not wasted endeavor."

With such a scientist as head of the medical department of the army, it is easy to understand how in the summer of 1897 Major Reed and Dr. Carroll were assigned the work of investigating Bacillus X (Sternberg) and "Bacillus icteroides," the latter recently declared by Sanarelli in the *Semaine Medicale* (Paris, 1897, xvii, 253-255) to be the specific cause of yellow fever. These medical officers were especially qualified to undertake such a study by the nature of their work in the Army Medical School in Washington, and by special post-graduate laboratory work at Johns Hopkins Hospital,—Reed in 1890-91, when he studied pathology and bacteriology; Carroll studying pathology there in 1891-2, and bacteriology the following year, 1892-3.

The results of their work with these two organisms proved that Sternberg's Bacillus X was an atypical colon bacillus, that B. icteroides (Sanarelli) was a member of the hog cholera group, and that neither one of them bore any causal relation to yellow fever. These conclusions absolutely refuting Sanarelli and others regarding this micro-organism were published by Reed and Carroll.*

About one year before the appointment of the present Army Yellow Fever Commission, *Medical News*, April 29, 1900, comments editorially upon the question, "Is Sanarelli's Bacillus Icteroides the Cause of Yellow Fever?" The "Preliminary Note" of Reed and Carroll's investigation of this organism is there reviewed. The editorial concludes, "There remains open for ambitious American bacteriologists a very interesting problem of etiology (of yellow fever) whose study the United States' possession of Cuba and Porto Rico will greatly facilitate and whose importance can scarcely be overestimated. Any discoveries in this matter will confer lasting fame upon the investigators."

Some time after the above there was issued from the Government Printing Office the "Report of Medical Officers Detailed by Authority of the President (McKinley) to investigate the Cause of Yellow Fever," by Drs. Eugene Wasdin and H. D. Geddings, of the Marine Hospital Service. The first of an elaborate set of conclusions published in this lengthy report, is: "That the micro-organism discovered by Prof. Guiseppe Sanarelli, of the University of Bologna, Italy, and by him named 'Bacillus icteroides,' is the cause of yellow fever."

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*(1.) Medical News, N. Y., April 29, 1899, "Bacillus Icteroides and Bacillus Cholerae Suis. A Preliminary Note." Walter Reed and James Carroll.

(2.) Medical News, September 9, 1899, "A reply to Dr. G. Sanarelli," Walter Reed and James Carroll.

(3.) Proceedings American Public Health Association, Oct. 1900. "The Etiology of Yellow Fever. A Preliminary Note." Reed-Carroll-Lazear-Agramonte.

(4.) Journal of Experimental Medicine, December, 1900, (Received for publication Feby. 25, 1900), "A Comparative Study of the Biological Characters and Pathogenesis of Bacillus X (Sternberg), Bacillus Icteroides (Sanarelli), and the Hog Cholera Bacillus (Salmon and Smith)." Walter Reed and James Carroll.

On June 25, 1900, the Board of Army Medical Officers, Major Walter Reed, Drs. James Carroll, Jesse W. Lazear and Aristides Agramonte, appointed upon the recommendation of Surgeon-General Sternberg to investigate "the acute infectious diseases prevalent in the Island of Cuba," assembled at Quemados, Cuba, and at once set about their study of the cause and means of preventing yellow fever. For the first few weeks they made cultures from the blood of living cases of yellow fever and from the blood and organs at autopsies upon cases of this disease. "Bacillus icteroides" was not recovered by them in a single instance, whence they conclude:

"1. Bacillus icteroides (Sanarelli) stands in no causative relation to yellow fever, but, when present, should be considered as a secondary invader in this disease."

While these bacteriological investigations in Cuba were in progress, the board were discussing the mosquito as a possible agent for the transmission of the disease. Nineteen years previously this theory had first been advanced by Dr. Carlos J. Finlay, of Havana, who wrote and experimented persistently upon it after his first announcement. The season and the manner of spread of a yellow fever epidemic; the work of Ross and others upon malaria and its mosquito transmission; Finlay's theory; the observations of Carter upon the length of time between the arrival of the infecting case and the appearance of the secondary group of infected cases; these, together with their own observations after their arrival in Cuba, are mentioned by the board as factors leading them to determine to test to a conclusion the mosquito theory.

It is to be borne in mind that Dr. Agramonte was stationed and working in Havana, while Drs. Reed, Carroll and Lazear were quartered in Columbia Barracks, near Quemados, and the seat of their principal work. Here the members of the board working at first to produce further evidence, which they did not think was needed, to refute Sanarelli, Wasdin and Geddings, and a few others, were working out in their daily intercourse and discourse in the laboratory, at table, and elsewhere, the best plans for future procedure. It was the board as a whole (excepting Agramonte) which first formed the conclusion to investigate the mosquito theory.

"The line of work being finally determined, there at once arose the tremendous responsibility involved in the use of human beings for experimental purposes. After careful consideration, the Commission reached the conclusion that the results, if positive, would be of sufficient service to humanity to justify the procedure, provided, of course, that each individual subjected to experiment was fully informed of the risks he ran, and gave his free consent. The members of the Commission, however, agreed that it was their duty to run the risk involved themselves, before submitting anyone else to it.

"It became necessary just at this time for Dr. Reed to return to this country and the experiments were begun by Dr. Lazear." ("Walter Reed and Yellow Fever," p. 131-132, H. A. Kelly.)

When Major Reed left Cuba, August 4, 1900, (Kelly) Carroll and Lazear began to carry out the work agreed upon by them and Reed as described above by Dr. Kelly; Agramonte was intentionally kept in ignorance, by direction of Dr. Reed, of this plan of investigation. Dr. Finlay furnished them with mosquito eggs of the genus with which he had been experimenting. These were hatched and the adult mosquitos were infected by Dr. Lazear applying them to cases of yellow fever. He applied his infected mosquitos then to nine healthy non-immunes including himself, but all failed to develop the disease either because the mosquitos had not been kept sufficiently long after their infection or because they were applied to the yellow fever patients too late in the disease. On August 27, 1900, however, Dr. Carroll bared his arm in the laboratory and allowed Dr. Lazear to apply to it a mosquito which had twelve days before bitten a severe case of yellow fever on the second day of the disease, and had thereafter bitten three other cases at intervals of 6, 8 and 10 days. The following is taken from the "Preliminary Note" read before the Public Health Association in 1900:

"Of the two cases which we have recorded as positive in Table III, we now propose to speak at greater length.

Case 10. Dr. James Carroll, Acting Assistant Surgeon, U. S. Army, a member of this board, was bitten at 2 p. m., August 27, 1900, by Culex fasciatus. This particular mosquito had bitten a severe case of yellow fever on the second day of the disease 12 days before; a mild case of yellow fever, on the first day of attack, 6 days preceding; a severe case of yellow fever, on the second day of the attack, 4 days before, a mild case of yellow fever on the second day of attack, 2 days before inoculation.

Dr. Carroll remained well until the afternoon of the 29th, when he states that he felt tired and for this reason, when on a visit to Las Animas Hospital, the same afternoon (29th), sometime between 4 and 6 p. m., after visiting a few patients, he left the wards and waited outside on the porch, while his companions remained in the wards.

August 30th. During the afternoon, although not feeling well, Dr. C. visited La Playa, distant about one and a half miles from Columbia Barracks, and took a sea-bath.

August 31st., A. M. Dr. C. realized that he was sick and that he had fever, although he refrained from taking his temperature, but did visit the laboratory, distant about one hundred and forty yards, for the purpose of examining his blood for the malarial parasite. The examination was negative. During the afternoon he was compelled to take to his bed. At 7 p. m., temperature was 102 degrees F. No headache nor backache; only a sense of great lassitude. Eyes injected and face suffused.

September 1st, 7 A. M. T. 102 degrees F. Blood again carefully examined by Dr. Lazear with negative result. 11 a. m., T. 102 degrees.

The case having been diagnosed as one of yellow fever, Dr. C. was at noon removed to the yellow fever wards.

9 p. m., T. 102.8 degrees, pulse 90; 12 o'clock, midnight, T. 103.4 degrees, pulse, 84.

September 2d, 3 A. M. T. 103.6, pulse, 80. A trace of albumen was now found in the urine. The subsequent history of the case was one of severe yellow fever. Jaundice appeared on September 3d.

The accompanying chart No. 1 contains all of the necessary data."

Thus in the person of Dr. Carroll was given the first demonstration that the mosquito conveys the infective agent of yellow fever. For three days his life hung in the balance,—a rather anxious time for his wife and children (five) in Washington, who were, through the courtesy and kindness of Surgeon-General Sternberg, kept informed by the daily cable reports to him.

Dr. Reed, in Washington during this anxious and critical period, was most solicitous as to Carroll's welfare.

On August 31, four days later, with the same insect with which Dr. Carroll was brought down, and three other mosquitoes, Dr. Lazier infected a private soldier who passed through a mild attack of the disease.

The sad martyrdom of Lazear occurred on September 25, 1900, after an illness of one week with yellow fever brought on by the bite of a stray mosquito in the yellow fever ward where he was engaged infecting mosquitos for his experimental work, by allowing them to bite yellow fever patients. Although he had previously allowed himself to be bitten by an infected mosquito, he failed to develop the disease in consequence of it. It was accidental rather than a part of the program that he was bitten as he was. In the President's address, American Public Health Association, 1902, Dr. Henry D. Holton, says: "The patriotism of the military as they spring to the defense of their country, always deserves and receives the applause of the populace. Their deadly conflict on the battlefield is made easy by martial music, the booming of artillery, the rattle of the infantry fire, and the advancing step of comrades. How much more should we recognize the course of such devotees of science as Dr. James Carroll and Jesse W. Lazear, who, filled with a great philanthropic love for humanity, calmly, quietly, without the cheers or even the knowledge of the multitude, silently submitted themselves to the test to determine in what way this pestilence was communicated. We are told, 'Greater love hath no man than this, that a man lay down his life for his friend.' We find that Jesse W. Lazear, fired and impelled by his great love for his fellow man, did offer his body as a sacrifice upon the altar of scientific investigation, to the end that in the years to come hundreds of thousands might escape this pestilential death. * * * * * * *

"The practical result of all this work and sacrifice has been evidenced this past summer; not a case of yellow fever has originated in Cuba for the past fourteen months, the quarantine period has been shorter by three months; thousands of lives and millions of treasure have been saved and a feeling of security has filled the communities of the southern portion of our country."

In McClure's, June, 1906, Samuel Hopkins Adams, in an article entitled, "Yellow Fever; A Problem Solved," says:

"Lazear died, a martyr to humantiy, and is remembered by one where the lesser heroes of our Cuban battlefields are acclaimed by thousands. Carroll barely escaped with his life, and Reed, shrinking from no peril which his companions braved, came through unscathed by virtue of some natural immunity, only to die of another illness the following year."

The apparent inference of this statement is that Dr. Reed was intentionally bitten by an infected mosquito. There is no published record of such inoculation. As a matter of fact, mentioned above, Dr. Reed was in the United States while, in August and September 1900, Carroll and Lazear demonstrated by experiment in Cuba that the mosquito conveys the disease. Doubtless Dr. Reed would have willingly submitted himself had he been in Cuba at the time.

Dr. Reed returned to Cuba early in October (Kelly), and, after reviewing the experiments conducted during his two months absence, reported at Indianapolis, October 22-26, 1900, before the American Public Health Association, the "Preliminary Note" referred to above, the second conclusion of which was:

"2. The mosquito serves as the intermediate host for the parasite of yellow fever."

In order to recuperate, Dr. Carroll now returned home on leave of absence until about the middle of November, 1900.

On November 20, 1900, Camp Lazear, so named in honor of their dead colleague, was established near Quemados by the Commission for the purpose of confirming and continuing their work with yellow fever and the mosquito. Inoculation experiments with mosquitos and with yellow fever blood, and experiments with fomites followed in a most brilliant and well considered series until the latter part of February, 1901, and furnished the basis of several reports[*] by the Commission, which extended and rounded out their work and established their claim.

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[*] "The Etiology of Yellow Fever. An Additional Note." Reed, Carroll and Agramonte. Journal American Medical Association, February 16, 1901.

"Experimental Yellow Fever." Reed, Carroll and Agramonte, American Medicine, July 6, 1901.

"The Prevention of Yellow Fever," Reed and Carroll. Medical Record, October 26, 1901.

In the "Additional Note" (see foot note) the following are the published conclusions:

"1. The mosquito—C. fasciatus—serves as the intermediate host for the parasite of yellow fever.

"2. Yellow fever is transmitted to the non-immune individual by means of the bite of the mosquito that has previously fed on the blood of those sick with this disease.

"3. An interval of about twelve days or more after contamination appears to be necessary before the mosquito is capable of conveying the infection.

"4. The bite of the mosquito at an earlier period after contamination does not appear to confer any immunity against a subsequent attack.

"5. Yellow fever can also be experimentally produced by the subcutaneous injection of blood taken from the general circulation during the first and second days of this disease.

"6. An attack of yellow fever, produced by the bite of the mosquito, confers immunity against the subsequent injection of the blood of an individual suffering from the non-experimental form of this disease.

"7. The period of incubation in thirteen cases of experimental yellow fever has varied from forty-one hours to five days and seventeen hours.

"8. Yellow fever is not conveyed by fomites, and hence disinfection of articles of clothing, bedding or merchandise, supposedly contaminated by contact with those sick with this disease, is unnecessary.

"9. A house may be said to be infected with yellow fever only when there are present within its walls contaminated mosquitos capable of conveying the parasite of this disease.

"10. The spread of yellow fever can be most effectually controlled by measures directed to the destruction of mosquitos and the protection of the sick against the bites of these insects.

"11. While the mode of propagation of yellow fever has now been definitely determined, the specific cause of this disease remains to be discovered."

In the report entitled "Experimental Yellow Fever" the board recites the clinical features of the disease as manifested in their experimentally infected cases. In "The Prevention of Yellow Fever," the Stegomyia fasciata is described, its appearance, habitat, breeding places, mode of life, and so on, together with methods for its control and suppression. Dr. John Guiteras (American Medicine, November 23, 1901, p. 809) confirmed the infected mosquito work by producing eight cases of yellow fever by this means in Havana; three of them proved fatal.

This brings the work of the Commission up to the summer of 1901, when Agramonte was relieved, and Carroll was again sent to Cuba, this time alone, "for the purpose of continuing the investigation into the causation and prevention of yellow fever." During August, September and October of 1901 he conducted experiments which showed that the specific agent of yellow fever will pass through a Berkefeld filter so fine as to prevent the passage of the smallest bacteria. He further proved that partially defibrinated blood heated to a temperature of 55 degrees C. for ten minutes loses its infectiousness. He autopsied a case of Dr. Guiteras', which was the first fatal case of yellow fever experimentally produced, and found the lesions to be identical with those in non-experimental yellow fever. Dr. Reed writes to him, October 26, 1901, in reply to a letter summing up his summer's work:

"My Dear Doctor:

"I have just received your letter of the 22nd and hasten to congratulate you on the thorough manner in which you have accomplished the task assigned you. The results could not be better and throw a flood of light on the Etiology of Yellow Fever. * * * * We can now go ahead and submit a contribution on the etiology of yellow fever. This we must do promptly after we have discussed all of the later results. * * *

"Again, congratulations. Hoping to see you back soon,

"Sincerely yours,

"W. REED."

The next report* of the Commission was the "Supplemental Note," which described the work of Carroll last referred to.

All of the results of the American Commission have been amply confirmed, among others by the U. S. Marine Hospital Service at Vera Cruz, and in Brazil by a Commission from the Pasteur Institute, published in November, 1903.†

During the next year no new results were accomplished, their search for the specific organism in the bodies of infected mosquitos, sectioned and mounted, being unavailing, as it had been before in their studies in Cuba of mosquitos dissected in the fresh state; also from prolonged study of the blood of yellow fever patients, made by all of them, especially by Carroll, from the very beginning of their investigations.

In the fall of 1902, with slowly failing health, Reed suffered an attack of appendicitis, which resulted six days after operation in his death, November 22, 1902. His death was widely noted, especially by scientific bodies throughout the world, and his loss universally mourned.

There remained now but one member of the Commission, James Carroll, who since the death of Major Reed, has never been relieved from duty upon the Yellow Fever Commission. "Dr. Carroll's interest in the subject has continued unabated, and he has embodied the knowledge acquired during his unique experiences in several papers of the greatest interest." (H. A. Kelly, loc. cit., p. 257.) Ever on the alert and keeping apace with yellow fever matters and any 'new work' performed by its numerous recent investigators, Dr. Carroll has continued the good reputation and maintained the dignity of the American Commission, whose results have been universally confirmed and practically unsupplemented.

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*"The Etiology of Yellow Fever. A Supplemental Note." Reed and Carroll. American Medicine, February 22, 1902.

†"La Fievre Jaune," by M. M. Marchoux, Salimbeni et Simond. Annales de l'Institute Pasteur, November, 1903.

Dr. Finlay's assertions (Medicine, Detroit, March, 1903) that the Commission had not given him proper credit for his theory and work, made it necessary for Dr. Carroll to publish "The Transmission of Yellow Fever," (*The Journal of the American Medical Association, May* 23, 1903), in which he set forth from Dr. Finlay's published writings the latter's claim and methods of experimentation and showed that the Commission had arrived at their conclusions by more accurate and scientific measures, but still acknowledged Finlay as the exponent for years of the mosquito theory, demonstrated by the Commission.

Carroll's best work since Reed's death, however, is evidenced in "The Etiology of Yellow Fever. An Addendum" (*Journal of the American Medical Association,* November 28, 1903). It is here that he conclusively controverts the claims of Working Party No. 1, Yellow Fever Institute, U. S. Public Health and Marine Hospital Service. In their elaborate report upon "The Etiology of Yellow Fever," a "protozoan parasite" named by them, "Myxococcidium Stegomyiae" found in the bodies of mosquitos infected by biting yellow fever patients, was described and pictured in its various stages and in different locations in the mosquito.

An editorial in the same number of the Journal in which Dr. Carroll's refutation of these claims appears, says:

"Not long ago the Yellow Fever Institute of the U. S. Public Health and Marine Hospital Service issued the report of Working Party No. 1, in which is described a protozoan parasite found regularly in certain mosquitos that had bitten yellow fever patients. This organism is described in detail and given the name 'Myxococcidium Stegomyiae.' On the face of it this report appears to be one of the most important contributions yet made to the much-vexed question of the etiology of yellow fever. The question was, Would it stand the test of scientific criticism?

"In this number of the *Journal* Dr. James Carroll, of the U. S. Army, brings forward certain facts that tend to weaken one's confidence in the soundness of the conclusions of Working Party No. 1. Dr. Carroll shows that the fusiform stage of the *Myxococcidium Stegomyiae* cannot be connected with the transmission of yellow fever, and that the organism is a yeast fungus found quite commonly in mosquitos fed on over-ripe bananas purposely besmeared with yeast culture. Added to this we have the important fact that Dr. Carroll has not been able to find the organisms in mosquitos known to have produced yellow fever in human beings after they had bitten yellow fever patients early in the disease, the insects having been fed only on blood, dry sugar and water."

These results were duly and gracefully accepted by the officers of the Marine Hospital Service.

"Yellow Fever: A Popular Lecture," (*American Medicine,* June 3, 1905) delivered at Galveston, under the auspices of the University of Texas, is one of Dr. Carroll's recent papers. It posseses definite value as a means of popular education regarding the history, ravages and propagation of yellow fever, and how to exterminate the disease. Two thousand copies were, for this reason, issued by the University of Texas and in the New Orleans epidemic of 1905, 10,000 copies * were printed for distribution.

In "Lessons to be Learned from the Present Outbreak of Yellow Fever," (*Journal of the American Medical Association,* October 7, 1905), Dr. Carroll considers the last New Orleans epidemic; stressing the necessity for the recognition of those mild cases of the disease responsible for its introduction and continuance, he points to the necessity during the epidemic for a board of experts paid by the community to investigate every case of fever, for immediate report to the health department of the city when official means to prevent the further infection of mosquitos may be undertaken.

Reasons for believing that the specific organism of yellow fever is an animal parasite are systematically presented in "Without Mosquitos there can be no Yellow Fever," (*American Medicine,* March 17, 1906.) †

The value.of the work of Major Reed, the ranking medical officer of the Commission, has been made so prominent since his death as to appear to eclipse the essential work of his colleagues, Lazear and Carroll, by whom was first actually demonstrated that the *Stegomyia Fasciata* is the source of yellow fever infection. The work of our Professor of Preventive Medicine, Gen. Sternberg, has been referrd to, and Prof. Welch cited upon its necessity as preliminary and fundamental to that of the Army Commission. No institution rejoices more in the achievements of one of its valued professors than does the George Washington University in the practical genius of Walter Reed. He was entitled to all he received, and it is hoped that his achievements will grow in renown and his personal qualities in the admiration and reverence of the world. But with the fame of Reed must also in justice be joined the equally important work of Carroll and Lazear, for it was these three men of the Army Commission, who, standing upon the foundation of what had been done before, made the discovery.

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*Verbal statement of the President of a parochial medical society.

†Other papers by Dr. Carroll are listed in "The George Washington University Bibliography, September, 1904," with its annual supplements.

Writing of Carroll, the only survivor, Dr. Kelly (Walter Reed and Yellow Fever, p. 256-7), says:

"All the reports of the Commission bear Dr. Carroll's name as well as that of Dr. Reed, and in reading them we should always bear in mind that, while the experiments were planned by the master mind of the chief, the accuracy with which they were carried out and the care by which all possible precautions were taken to exclude every source of error, are due to Dr. Carroll quite as much as to Dr. Reed."

In *Outlook*, August 11, 1906, pp. 834-35, appeared an editorial entitled, "The Republic's Forgetfulness," describing the work of the Reed-Carroll-Lazear-Agramonte Commission and its results, and asking, "What has the country done for the men who, at the hazard of their lives, have done so much for their country? Nothing."

I am informed that Dr. Lazear's widow receives a government pension of seventeen dollars per month.

In the Columbian University (now George Washington) after Major Reed's death, Dr. Carroll was made Professor of Bacteriology and Pathology; in the Army Medical School he was likewise given Reed's work as Professor of Bacteriology and Sanitary Microscopy; and made Curator of the Medical Museum; and in 1902 he was commissioned First Lieutenant. His promotion to the rank of Major in the Army Medical Corps has been talked of for several years:

"*Government Recognition for Brilliant Achievement.*—Some of the friends of Dr. James Carroll have from time to time suggested that his brilliant and courageous work in connection with yellow fever had won for him the right to some special recognition in official life and it has been suggested that the least that could be done for him would be to promote him to the grade of full surgeon, thus giving him rank and pay of a Major in the Army. We now understand that some of his friends are urging special legislation looking to such a step, and we believe *American Medicine* voices not only the feeling of Dr. Carroll's personal friends, but also of the entire medical profession of the country, when we say that this movement has our full endorsement and our best wishes for success. Dr. Carroll is now First Lieutenant and Assistant Surgeon. He has worked his way up from the ranks by hard, conscientious, faithful and courageous labor. We Americans have reason to be proud of him for his work, especially in connection with yellow fever." Editorial, *American Medicine,* November 26, 1904, pp. 906-907.

The following is taken from the Proceedings of the National Leglislative Council of the American Medical Association, published in the *Journal,* January 20, 1906:

> "REPORT ON GOVERNMENT RECOGNITION OF THE SERVICES OF DR. JAMES CARROLL.
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> "Dr. John S. Fulton, of Maryland, introduced the following:
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> "WHEREAS, In the Year of our Lord nineteen hundred, a Yellow Fever Commission was appointed by the Army of the United States to investigate the causes of yellow fever and to devise means for its eradication, the said Yellow Fever Commission consisting of Dr. Walter Reed, surgeon in the Army of the United States, Dr. James Carroll, Dr. Jesse Lazear and Dr. Aristides Agramonte, acting assistant surgeons in the Army of the United States; and
>
> "WHEREAS, The said Yellow Fever Commission, consisting of Dr. Walter Reed, Dr. James Carroll, and Dr. Aristides Agramonte (Dr. Jesse Lazear, deceased), did then and there determine the cause of yellow fever, and devise means for its prevention, by which means yellow fever was eradicated from Havana and Cuba, and thousands of lives have been saved in the United States and other parts of the Western Hemisphere; and
>
> "WHEREAS, Dr. Jesse Lazear, an acting assistant surgeon in the Army of the United States, did subject himself to the bite of an infected mosquito, from which bite Dr. Jesse Lazear suffered death; and
>
> "WHEREAS, Dr. James Carroll, an assistant surgeon in the Army of the United States, did subject himself to the bite of a mosquito infected with yellow fever, and suffered a grave and almost fatal attack of yellow fever, being the first attack ever experimentally produced: be it
>
> "RESOLVED, That the National Legislative Council of the American Medical Association expresses its appreciation of the valuable work accomplished by the Yellow Fever Commission in the interest of humanity, the material and bodily welfare of the people and of the Army of the United States, and of the heroism and devotion of the aforesaid Major Walter Reed (deceased), Dr. James Carroll, Dr. Aristides Agramonte and Dr. Jesse Lazear (deceased); and be it further
>
> "RESOLVED, That this Council commend to the Government of the United States adequate recognition of the gallant and meritorious services of the said Dr. James Carroll, the only surviving member in the Army of the United States of the said Yellow Fever Commission."
>
> This report was unanimously adopted by a standing vote.

It may be prophetic when Dr. Kelly entitles him *Major* Carroll throughout his book. Last April (1906) Senator Dick introduced a bill (Senate 5888) authorizing the President to place James Carroll on the retired list with the rank of Major. The bill was referred to the Committee on Military Affairs of the Senate. Is the medical profession to let it end there?

The work of the Army Commission is highly esteemed abroad. The following is taken from the President's Address,* 1906, British Medical Association:

"Major Ronald Ross's discovery that malaria is conveyed by mosquitos, which act as an intermediate host, has not only led to successful measures to practically eradicate malaria with its attendant evils, but has given the clue to the cause of yellow fever and its treatment, etc. The first positive proof that the Stegomyia was the carrier of the infecting agent of yellow fever was given when Carroll, in July, 1900, offered himself for a test experiment with a self-sacrifice worthy of all praise. He had a very narrow escape, but Lazear, of the American Commission, and Myers, of Liverpool, lost their lives. That the labors and sad deaths of these heroic men were not in vain is amply attested by the remarkable vigour and success with which the recent plague was stamped out, and the exemption secured by Havana and other pest centres."

The highest honor yet proposed for Dr. Carroll comes from the other side of the water in an editorial in the *British Medical Journal,* September 8, 1906. He is worthy of the honor proposed.

"In regard to yellow fever, Panama affords as striking an object lesson as Havana of the incalculable benefit to mankind that had followed the discovery of the cause of the disease and the manner of its transmission. The glory of the work which has had this striking consummation is shared by several men. The credit of the conception belongs to Dr. Carlos Finlay, who propounded the idea many years ago without attracting from the profession any attention but an occasional contemptuous notice. More fortunate than many true begetters of new truths, Dr. Finlay, at the meeting of the Pan-American Medical Congress, held at Havana in 1901, was acclaimed by the assembly as the author of the discovery which has already been so fruitful of good effects. Dr. Carter was another pioneer in the work which was brought to completion by the American Commission. Ultimately death snatched the reward from the hands of Walter Reed and Lazear, but Drs. Carroll and Agramonte still survive. It would, we think, be a fitting acknowledgement of the work of these four men if the Nobel prize were divided among them. It will scarcely be denied by any one conversant with the facts that their work is of far greater importance than that of several to whom the prize has been awarded in the past few years. The only original research work whose practical results can be held to compare with it is that which had brought malaria, that monster which till lately claimed so vast a tribute of human lives, within the control of man."

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*British Medical Journal, Sept. 8, 1906.

THE EYE—FROM THE GENERAL MEDICAL POINT OF VIEW.*

By C. Norman Howard, M. D., Assistant-Physician, Out-Patient Department, University Hospital.

If the full effects of a particular disease could be traced, probably every tissue would reveal the sinister touch of its particular pathology. Intercommunication is reliable and swift, and following in its wake come the products of pathologic physiology, to depress the tissues and bear substantial testimony to an altered function and a suffering organ. The depression of remote tissues may be so brief and so slight that it has past before it can be assigned a place in the symptom group. In the other extreme, it may be so great that it overshadows at times the original lesion, as in the gastric crisis of locomotor ataxia, or the yellowish tinge to the skin following catarrh of the duodenum. There is a space between these two extremes which is not entirely filled with knowledge.

A disease may represent the center of a circle, and small arcs on the circumference all the tissues of the body. Thus we might tentatively place nephritis in the center and let each radius running from it terminate, and tell of the effect, upon the heart, the liver, the lungs, the eye and the lymphatics, etc., and if we could multiply the number until each organ or system had been drained of its crucial changes we would have a picture the study of which would preclude a mistake in diagnosis, because the picture would be the diagnosis. The name for it would be but a convenient title, even as pictures in the art galleries are known by their titles.

It is of interest to note that each one of the twelve main divisions of diseases (running the whole gamut from those due to animal parasites to those of the nervous system) has at one time or another been placed in the center of the circle and questioned as to its relation with eye pathology. This does not carry the implication that even the majority of the sub-divisions are held blamable, as far as our present knowledge is concerned, nor does it mean that I will recount more than will serve to illustrate my point of view.

In diseases of the blood and of the circulatory system, the eye is a potential field of information. In the examination of this fluid tissue and of this system we listen to it a little to the right of the left nipple line, and we feel it at the wrist and take away drops of it for observation and various tests. By instruments its power is noted and in old men we incidentally get partial shadows of it while taking some of the X-ray pictures. If there is then inserted a strong convex lens between the pupil and the ophthalmoscope there will be seen a bright yellowish-red background and resting upon it a terminal artery and the beginning of a vein; an integral portion of the system we are studying, actually at work in its own home. If there is a general change in the circulatory system, this terminal artery and this vein will not be slighted.

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*Read January 20, 1906, before The George Washington University Medical Society.

In arterio-sclerosis a retinal vein cannot be seen through the artery which crosses it, as formerly, because the latter has lost its translucency. There will also be found white stripes in the walls of the vessels where degeneration exists. In mitral disease (and in other conditions where there is a damming back of the blood from the head, as in emphysema or even in violent cough) the retinal veins are engorged and stand out big and thick compared with the retinal arteries, which have not undergone such radical change in size. Endarteritis may bring with it hemorrhagic retinitis, where the degenerating walls of the retinal vessels have given way. In this same disease of endarteritis there may be black specks floating across the yellowish-red reflex, and the patient sees them also and speculates as to cataract, whereas they are floating opacities in the vitreous. Then, again, a patient with arterio-sclerosis, or with aneurysm, or with valvular disease of the heart is suddenly deprived of his sight. A small fragment has broken loose from its moorings and traveled with the circulating blood until it has plugged an artery through which it could not pass. In this condition the ophthalmoscope may reveal an embolism in the retinal artery.

Under so-called diseases of the urinary organs, the inflammation of the retina occurring with nephritis is at once a valuable and an unfavorable sign. It is a sign which may, perhaps, be uncovered while making an unbiased ophthalmoscopic examination. The specialists tell us that two years after it is seen more than a slight majority of the patients are dead[1]. Here then is a finding of definite value in diagnosis and prognosis.

In diseases of the digestive system, constipation has been held responsible for some of the cases of recurring styes, and portal congestion for opacities in the vitreous.

It is of interest to note that in constitutional diseases as gout and rheumatism there is frequently associated a conjunctivitis, probably due to vaso-motor disturbance. In rheumatism we also have occasionally to contend with keratitis and optic neuritis. There is another with especial reference to their vision. Some of my findings I have noted in the following table:

Unaided vision in the right eye was better than the left in 22 per cent, or 94 patients, of which number 52 had vision of 20-20th or over;

Unaided vision in left eye was better than the right in 36 per cent, or 151 patients, of which number 77 had vision of 20-20th or over;

Unaided vision was the same in each eye in 42 per cent, or 177 patients, of which number 86 had vision of 20-20th or over.

Both eyes had the same type of error (excluding presbyopia) in 79 per cent, or 333 patients;

Each eye had a different type of error in 17 per cent, or 73 patients;

Presbyopia, without other refraction error, was found in 4 per cent, or 16 patients.

The following shows the relative number of the different errors of refraction in those whose eyes have the same type of error:

	Per cent.	No. of patients.
Emmetropia (without error)	3	10
Hyperopia	41	136
Hyperopic Astigmatism	16	53
Compound hyperopic astigmatism	22	74
Myopia	6	21
Myopic Astigmatism	5	17
Compound myopic astigmatism	4	14
Mixed astigmatism	3—	8
Total	100	333

Presbyopia, with other refraction errors, which are included in the above list, 56 patients, making the total number of presbyopics 72.

Vision was tested under homatropine in 72 per cent, or 303 patients; 86 per cent of this number were also examined with the retinoscope, being 263 patients.

These patients include old and young, black and white, and male and female and the data was obtained in the majority of instances in the following manner:

A patient coming to the dispensary for the first time and apparently having an error of refraction, the vision was ascertained and he was told to report back early on the other afternoon in the week. At that time homatropine hydrobromate, grain one to the dram, was instilled in each eye. Starting an hour before my arrival, one drop was inserted at ten minute intervals until each eye had received six drops. He was then taken into the dark room and examined at one-half meter distance with a plane mirror retinoscope. This is an exact, objective, mathematical method of determining pathologic departures from the physiology of the eye. The pupil being dilated and the accommodation paralyzed it made any necessary ophthalmoscopic examination easy at this time. He was then tested with the cards and lenses. Although the effects of homatropine wear off in less than two days, it seemed best to not have them return on the other day that week, but to report back on the same day the following week. The accumulated data was then used in giving a final test and the glasses ordered. He was to secure the glasses the next day and wear them, and report back in two weeks with them. There were 159 patients out of the 422 in whom, it seemed to me, unnecessary to adopt the full method and it was curtailed in varying degrees with them. On the other hand, it was occasionally found that the homatropine had not sufficiently conquered a stubborn ciliary muscle and the patient was later given atropine.

My thanks are due Dr. Belt, the ranking officer on the staff, for the opportunity of serving these patients, and to him and the other members of the staff, Dr. Griffith and Dr. Lamb, for their aid in acquiring other clinical facts during my recent connection with the hospital.

In looking at the above figures it would seem that what might first attract attention is that 86 of these patients, or 20 per cent, had normal vision in each eye, and yet I found but ten who had both eyes normal. Then there were 129 other eyes distributed among patients whose vision was unequal which had normal vision; and yet I found but seven eyes divided among seven people which were normal. Now how were those eyes obtaining this normal vision? By working beyond their physiological capacity—by straining. And can we in safety say that this straining was only confined to them? Were not those in which the vision fell below normal not only making a greater effort against greater difficulties to accomplish normal vision and without the satisfaction of success? It has been interesting to note that, after the use of homatropine, patients have stated the eyes felt better; due to the rest received while lying in splints for two days.

Out of the great mass of material which has been written on eye strain, Dr. Gould apparently stands first as our most prolific and with his clear diction, most interesting of all those who have treated of this subject. It must not be forgotten, however, that thirty-one years ago Dr. S. Weir Mitchell called attention to eye strain in its morbid effect upon the rest of the body, and he was probably the first one who did so[5].

Dr. Gould tells us that eye-strain is the greatest cause of inflammatory disease of the eye itself[6].

The most important radius, which we can follow to the circumference, when the eye is in the center, is that leading to the nervous system. It must be remembered that we have a constant drain on this system in helping the eye to cover its deficiencies, and further that the nervous system cannot show constant favoritism to one organ without its own and other systems suffering.

Thus we find eye-strain a causative agent in many cases of occasional headache, constant headache and in that peculiar, periodic and painful afflication known as "migraine," or "sick headache." This last trouble frequently comes to those of a highly nervous organization, especially if they are men and women of education and culture, who not only read and write a great deal, but demand of their eyes a clear transmission of what can be seen, even as they demand of themselves and receive from their associates a clear mental picture of a subject. If reference be made to the figures given above, it will be seen that in 17 per cent, or 73 patients, the type of error was not the same for each eye. One might, for instance, be far-sighted and the other astigmatic. Only in 7 of this number was one of the eyes normal. Imagine for a moment one eye attempting to overcome its error and passing its result, such as it may be, back to the brain, only to meet the result which another eye has acquired while struggling with a different type of error, and then the two are to form one picture. Is it any wonder that the owner is disgruntled and forces them to do their utmost at all times? It is perhaps fair to suppose that this constant insidious strain eventually produces a little irritation which grows and grows and finally culminates in a nervous storm so great and so far-reaching that the eyes and head and digestive system are all involved. Those who are interested in seeing how Dr. Gould believes that eye-strain can mar the happiness of men will find melancholy pleasure in reading his "Biographic Clinics, giving the origin of ill health of DeQuincy, Carlyle, Darwin, Huxley and Browning."

Toward the close of my series of cases I made definite notes regarding headaches. That is, at the time the glasses were ordered the patient was questioned as to whether he had had headaches, and, if so, for how long and how often. When he returned in two weeks or later, having secured and worn the glasses in the meantime, additional notes were made.

These notes resulted in the following:

- Total number reporting back in regard to headaches, 50;
- Headaches made worse after wearing glasses, 6 per cent, or 3 patients;
- Headaches uninfluenced by glasses, 6 per cent, or 3 patients;
- Headaches relieved partially or completely after wearing glasses, 88 per cent, or 44 patients.

This does not include those who had errors of refraction and suffered from headaches, but did not report back after wearing the glasses.

Epilepsy has long been considered as probably due to a constantly acting slight irritation. Gould found in examining 68 epileptics that 98 per cent of them had astigmatism[5]. Some epileptic patients have definitely ceased having convulsions after the correction of an error of refraction.

Insomnia, chorea and hysteria have all been held up as due in some cases to eye-strain and with apparent justification. In regard to the effect on the digestive system, the nausea and vomiting associated with migraine have been referred to. Anyone who doubts that nausea can be caused by the eye has but to place a cylindrical lens before a neurotic astigmatic patient and turn the axis the wrong way. Errors of refraction must also bear scrutiny in tracing the etiology of sea-sickness and car-sickness.

Having examined the eye from the general medical point of view it might be well, in closing, to remember that it is not the intention to exalt this organ to a high plane of diagnostic value or etiological importance above its fellows. It has only been dealt with here exclusively because that was the subject matter of the paper. It has a diagnostic value and it has an etiological importance, but it ranks in each above some and below other constituent parts of the body, and it was largely to determine its relative position that a study of it appealed to me as a general practitioner.

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[1] De Schweinitz—Diseases of the Eye.

[2] Osler—Practice of Medicine.

[3] Burnett—Journal A. M., Association, Dec. 23, 1905.

[4] De Schweinitz—Univ. Penn., M. Bull, Phila., 1905-06, xviii, 78-81.

[5] Gould—Biographic Clinics.

[6] Gould—American Medicine, Oct. 10, 1903.

SYMPTOMATOLOGY AND TREATMENT OF EXOPHTHALMIC GOITRE AND REPORT OF CASES. *

By Dwight Gordon Smith, A.B., M. D., '03.

Exophthalmic Goitre since it was first brought to the notice of the medical profession almost a century ago, has been one of the most interesting and I may say one of the most mysterious diseases with which we are confronted. Always a fascinating study to the observer, of late it has become a source of an enormous amount of literature despite which, however, we still grope in the dark and the exact significance of the disease is yet unknown. On account of the latitude of the subject and the brevity of the time allowed me, I will devote myself entirely to the symptomatology and treatment of exophthalmic goitre, the two phases of the disease emphasized by the cases to be reported by me. These cases, eight in number, were treated in the service of Dr. James Dudley Morgan at the Emergency Hospital of this city, to whom I am indebted for his kindness in permitting me to make use of them. I also am indebted to Dr. W. E. Magruder, of Sandy Springs, Md., for data.

Exophthalmic goitre has five general symptoms which are now classic. They are nervousness, tremor, protrusion of the eyeballs, tachycardia and enlargment of the thryoid gland. These are always accompanied by secondary symptoms involving the various systems of the body. The thyroid gland is usually enlarged and in the majority of cases the enlargement is the first symptom noticed. The swelling may appear very slight until we remember that the normal gland can be rarely palpated and when a gland is of such size that it can be felt, we may be reasonably assured that it is diseased. The gland is seldom as large as it is in parenchymatons goitre. One lobe may be swollen more than its fellow and it is a curious fact that when such is the case the eye on the corresponding side protrudes more than the other. By reason of its increased vascularity the gland may pulsate but such was not the case with any of our patients.

The heart beats are accelarated and the face of the contractions increased. The pulse runs 90 to 150. Murray reports a case where it was 200. Cardiac murmurs may be present according to Gowers, Murray and Reynolds, but this was not found in any of my cases although one had a well marked hypertrophy of the left ventricle. Tachycardia occasionally is the first symptom to appear.

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*Read April 26, before The George Washington University Medical Society.

Exophthalmos usually develops after the previous ones have made their appearance. The eyeballs may protrude to such a degree that the patient presents a ghastly and unnatural appearance or the protrusion may not be perceptible. Usually the eyes have a startled, staring look. In some cases the upper lid does not follow the eyeball when it is turned downward but descends with a jerky movement.—Graefe's sign. It was noticed in two of our cases. Stellwag's sign, a widening of the palpebral fissue owing to the spasm of the elevator of the lid was presented by two of the cases to be reported. Moebius's sign is a deficiency in the power of convergence of the eyes. It is demonstrated by causing the patient to look at a finger as it is moved toward the eyes. They converge until a certain distance is reached then they suddenly become parallel. This was seen in one of the cases. Conjunctivitis was present in two, one had marked pterygium.

All of the cases were troubled with severe attacks of mental anxiety and nervousness. Two were apprehensive of sudden death. All had violent palpitation when they were at all frightened. Four suffered from insomnia. Three had severe pains in the lumbar region and two in the limbs.

Tremor of the hands or feet or tongue is present in a majority of patients according to Murray and Gray. It is usually fine and according to Osler about eight to the second. It may be very pronounced interfering with writing or sewing but such severe cases are rare. Two cases had tremor of the hands and tongue and three of the hands alone.

One of the cases had elevation of temperature, the others were normal. One complained of hot flushings, one of feeling cold. Profuse perspiration by day or night is common. Loss of hair is frequent. Two had polyuria. According to Ord, Murray and Taylor this is a common symptom. Diarrhoea, which Osler, Murray, McKenzie and Ord say is very frequent occurred only once in my series, while three of the patients suffered from constipation. Amenorrhea is often present in female cases, two of my cases had it. Emaciation in various degrees was a feature in seven out of the eight cases. In two instances it was extreme. Osler says eighty per cent of exophthalmic goitre occurs among women, some writers claim ninety-five. Three of this series were men which is a very high percentage of males. None of the observers whom I have consulted mention race as a predisposing factor in the causation of exophthalmic goitre and none puts any stress on its prevalence among negroes. Six of this series were negroes.

Treatment: There has been prescribed a multitude of drugs for the cure of exophthalmic goitre, and many therapeutic methods have been exploited. Nearly all have had their day and then been relegated to the past. Hygienic treatment is of importance as it is in other diseases, the conditions indicated being fresh air, good food, quietude, warm baths and a low altitude, the seaside being especially good. There is no need to send patients out of Washington as the climate here is favorable. Massage is beneficial in cases where the patients are confined to bed, but exercise is better when possible. Very severe cases should be treated by absolute rest in bed. Milk and a light easily digested diet should be ordered and rich food and stimulating beverages interdicted.

I will mention some of the drugs which have been employed in the treatment of this disease: Digitalis, strophanthus, opium belladonna, ergot, vetatrim-viride, iodine, iodides, bromides, salycilate of soda, phosphate of soda, thymus gland, and thyroid extract. One of the older methods of treatment still employed is that of inunctions of the ointment of red mecurial iodine. It is rubbed over the gland. The nervousness can be treated by the use of bromides. Anemia should be met with iron. For this purpose the elixir of iron, quinine and strychnine was given with success to several of my cases. Electrical treatment has its advocates, faradism being employed by Vigoroux, but others have not obtained the success that accompanied his treatment. Lockwood, Lewandoski and Charcot have employed galvanism. Hector McKenzie, Ord and Taylor do not advise it. Surgical interference has met with varying degrees of success. Some observers are enthusiastic, but others have not reported much success. The older operations were division of the isthmus, ligature of the thyroid arteries and denudation and exposure of the gland. The operations in vogue at present are Jonnesco's extirpation of the cervical ganglia and partial thyroidectomy.

The treatment employed on five of this series was the administration of sulphuric acid. About a year ago Dr. W. E. Magruder reported two cases of exophthalmic goitre treated by himself and three by his son, all of whom were cured by the use of sulphuric acid. Some years ago he had tried about every recommended agent in a very obstinate case of exophthalmaic goitre with no improvement. He then began the use of sulphuric acid with gratifying results. I will quote from Dr. Magruder's paper. He says: "While looking up the subject I was struck by the statement of Handfield Jones in his treatment of nervous diseases. 'Sulphuric and nitric acids certainly have some claim to be toners of the vaso-motor nerves, they cannot act in their original form on the parts which they influence as their quality must be lost the moment they enter the circulation.

They cannot be mere astringents like tannin. When sulphuric acid restrains choleraic purging or colliquative sweating, these effects must be surely produced by the nerves that regulate the arteries of the internal and external integument.' Something to give tone to the vaso motor system seemed to be indicated, so I determined to give sulphuric acid a trial." In addition to what Dr. Magruder says, Wood states that sulphuric acid is not merely a local astringent, but acts systemically.

Undoubtedly there is a vaso motor disturbance in exophthalmic goitre. Solis Cohen calls it a vaso-motor ataxia, Madison Taylor a cardio-vascular erethism. Such being the case theoretically the administration of sulphuric acid would seem to be a rational treatment of exophthalmic goitre. Dr. Morgan suggested that I try Dr. Magruder's treatment in the cases on our clinic. This suggestion was acted upon. Sulphuric acid was prescribed in six cases. One left the city, thus leaving five to be observed. Four are apparently well and one, who is still under treatment, has greatly improved and is practically cured. I will briefly report the five treated with sulphuric acid.

Case I. Louise C. admitted to the dispensary Dec. 28, 1904, colored, female, domestic, aged 34. For several months she had suffered from pains in chest, marked nervousness and insomnia. Exophthalmos was extreme, Graefe's sign was present. The pulse was 116, the thyroid gland enlarged. She also complained of leucorrhoea and constipation. She was advised in regard to hygiene and diet and was given sodium bromide and pills of aloin, belladonna and strychnine. She did not return until May, 1905, when her condition was much worse. The nervousness was increased and the gland larger. Aromatic sulphuric acid (twenty drops thrice daily) was prescribed. By the latter part of June she had greatly improved, the pulse being 96 and the nervousness ameliorated to a marked extent. The treatment was continued faithfully and on September 25, 1905, she was apparently well. She slept well, had no pain, the exophthalmos had subsided, the gland was reduced in size, pulse normal, the nervousness had disappeared and the patient had gained in weight. Since then she has had no return of her old symptoms.

Case II. Betty M, colored, female, domestic, aged 24, came to hospital July 25, 1905. She was extremely nervous and in great mental anxiety. She had tremor of the hands and tongue, swollen thyroid gland, marked exopthalmos, tachycardia (pulse 128), anemia and emaciation. She was given elixir of iron, quinine and strychnine and aromatic sulphuric acid (drops, twenty) three times daily. In one month she improved greatly, all symptoms decreasing. By

September 15 the exopthalmos had decreased and the thyroid gland had diminished in size and the patient was cheerful and contented. On November 29 the pulse was 79, the nervousness gone, the gland and the exopthalmos greatly reduced and the tremor had disappeared. She did not come back to the hospital until January 23, 1906, but there was no return of her previous condition. She was told to report from time to time.

Case III. William M. colored, male, laborer, aged 21, came to dispensary March 10, 1905. He had suffered from severe attacks of nervousness and mental anxiety for several months and had been troubled with malaise, anorexia and profuse night sweats. As he was rapidly losing weight he was tortured by the fear that he had tuberculosis. He had exophthalmos, tachycardia, enlarged thyroid and polyuria. He was given sodium bromide, returned to the hospital once and after that not until May 10, 1905. He was in a pitiable condition. The mental anxiety was extreme, simulating melancholia, the pulse 120, and the gland much larger. He was given aromatic sulphuric acid and immediately began to improve. On May 23, all symptoms were lessened, the pulse 101. This improvement kept up, each visit to the hospital showed a gain in his condition. By August his pulse was 81, the nervousness pains and polyuria had all disappeared, the exophthalmos reduced nearly to normal and the gland scarcely palpable. He has had no return of the symptoms since then.

Case IV. William B, colored, male, aged 20, entered dispensary March 20, 1906, complaining of pains in the chest and lumbar region, loss of weight and night sweats. He was in mental agony, fearing that he had tuberculosis. He also suffered from malaise, anorexia and shortness of breath, eyeballs protruded extremely. Stelwags and Moebius's signs were present and on the left eye was a pterygium. The thyroid gland was swollen and tremor of the hands was marked, the pulse 140, the apex of the heart was displaced downward and to the left, anemia was marked. He was given the elixir of iron quinine and strychnine and aromatic sulphuric acid, twenty drops three times a day, which was later increased to half a teaspoonfull. Ten days later his pulse was 72 and the nervousness and tremor had disappeared. He is still under treatment. He has gained in weight, appetite is good, night sweats have disappeared and the pulse is normal. Already the gland is smaller and the exopthalmos decreased.

Case V. Carrie S., colored, female, domestic, aged 36. Patient was always of a nervous temperatment, showing a marked neurotic taint. She came to the hospital December 7, 1904. For a year she had periods of feeling cold, which alternated with attacks of profuse perspiration. She had suffered from severe pains in limbs and chest and loss of weight. The exophthalmos was the most extreme of the series, the patient having a startled, staring appearance. The thryoid gland was quite enlarged, the tachycardia pronounced, pulse running up to 150 at the slightest provocation. The patient was emaciated and anemic. The peripheral veins were congested. The menstrual function had been suspended for a year. She was instructed in regard to hygiene and diet and thyroid extract was prescribed, also tincture of strophanthus. By December 29 she had improved very little and iron was ordered. For three months she came to the dispensary once a week with little or no apparent benefit. On April 28 she was given sulphuric acid. May 6 she was better, the pulse was 82 and the nervousness greatly relieved, the gland and the exophthalmos unchanged. During the summer she continued to improve in every way. By October the gland had become greatly reduced in size, the exophthalmos hardly discernible, and the nervousness, tachycardia, sweating, amenorrhea and pains were things of the past. She had increased in weight, and, as she expressed it, she felt like a new woman.

In conclusion, I will say that it is too early to state that sulphuric acid is a specific for exophthalmic goitre, but in view of the two cases cured by Dr. Magruder and three by his son and the five cases so greatly improved, and probably cured, in our clinic and no failures in the ten trials, sulphuric acid should have the benefit of a thorough test on every case of exophthalmic goitre.

ANNUAL ADDRESS OF THE PRESIDENT OF THE GEORGE WASHINGTON UNIVERSITY MEDICAL SOCIETY.*

By A. Barnes Hooe, M.D., '96.
(Gynecologist, Out-Patient Department, University Hospital.)

Gentlemen: During the summer of 1905, several Alumni of the Medical Department of The George Washington University deemed it advisable to form a medical society in this city whose membership should be composed of Alumni of this Department. On September 23d, a call, signed by ten Alumni, was sent out to all of the body who were resident in Washington and vicinity to meet in the medical building of The George Washington University on October 7th to consider the advisability of such an organization. About fifty responded, and decided to form such a society; and a committee was appointed to prepare a constitution and bylaws and to submit them for consideration at a subsequent meeting. On October 27th, at a meeting held at Rauscher's, a permanent organization was effected, a constitution was adopted and officers were elected. About eighty were present at this meeting, including Dr. Needham, President of the University, and many of the medical faculty in addition to the Alumni.

In the selection of officers, the Society saw fit to bestow upon me its highest honor by electing me its first President, an honor which I sincerely appreciate. We have passed one year of successful activity with ever-increasing enthusiasm and interest and our members have presented at our monthly meetings many valuable scientific papers. Now at our closing meeting it becomes my duty to make the annual address as President prescribed in the constitution, and I trust you will bear with me while I sketch the history of the Medical Department of The George Washington University; with the limited time at my command, my address must necessarily be brief.

In the early days of our Colonists the care of the sick was mostly in the hands of the clergy, who deemed it their duty to look after the physical, as well as the spiritual welfare of their parishioners. While early American history informs us that there were at times physicians among the Colonists, as in the case of the physician who accompanied Captain John Smith in his expedition up the Potomac River, yet we are led to believe that they were not always at command, for later, when Captain Smith was injured by an explosion of gun-powder, he had to return to England for surgical care. Our early American medical history is very interesting and some of its accounts curious. The first American publication in this field was a book-let entitled, "A Brief Guide in the Smallpox and Measles," written and published in 1677 by a clergyman, and the second, which followed about two years later, entitled "A Good Management of the Distemper of the Measles," was also by a minister of the gospel.

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*Presented at the first annual meeting of the Society, held at Rauscher's, May 19, 1906.

We learn that early in the eighteenth century there were a few regular physicians, educated in Great Britain, scattered about among the Colonists, but not until about 1750 was any effort made to give our young men careful instruction in medicine. The little they could learn from the few physicians in the country was by talking with them and using their very limited libraries.

The first serious attempt at teaching medicine was in 1756, when Dr. William Hunter, a celebrated Scotch physician, delivered a course of lectures in Newport, Rhode Island, to which all medical students, physicians and cultured men of the city were invited. In 1765, two young Americans who had been educated in Edinburg, started the first medical school in America in the city of Philadelphia, which was first connected with the College of Philadelphia, and became ultimately a department of the University of Pennsylvania. This school being a success, New York organized a school two years later known as the Medical Department of King's College. Fifteen years later the Medical School of Harvard was organized, and was the third in America. Although Harvard College was organized in 1636, not until 1782 was a medical school attached to it. The fourth medical school to be founded was that of Dartmouth, which was organized in 1797; for the first twelve years it had only one professor, who taught all the branches of medicine and graduated a number of physicians. Then followed:

5th. The College of Medicine of Maryland in 1807.

6th. The College of Physicians and Surgeons of the Western District of the State of New York in 1812.

7th. The Medical Department of Yale in 1813.

8th. The Medical College of Ohio in 1818.

9th. The Vermont Academy of Medicine in 1818.

10th. The Medical School of the Transylvania University in 1818.

11th. The Medical School of Maine in 1820.

12th. The Medical Department of Brown University in 1821.

13th. The Medical Department of the University of Vermont.

14th. The Berkshire Medical College at Pittsfield, Mass.

15th. The Medical College of South Carolina.

16th. The Medical School of Jefferson College, Philadelphia.

17th. The Medical Department of the Columbian College, now the Medical Department of The George Washington University, which was chartered the 9th day of February, 1821, but did not begin a regular course of lectures until 1825.

About 1817, Rev. Luther Rice conceived the idea of establishing a College in the District of Columbia and in 1819, a tract of land embracing about forty-seven acres, situated between Fourteenth and Fifteenth Streets N. W., and north of Boundary Street, (now Florida Avenue) was purchased for about $7,000. A building was erected at a cost of about $35,000, which was sufficiently completed to allow the opening of college in 1822. Congress had granted a charter to Columbian College which was signed by President Monroe on February 9, 1821. This charter empowered the trustees and faculty to establish academic and professional schools and to confer degrees. The following schools were at once projected: Preparatory, Collegiate, Theological, Law and Medical. The records show that the first classes were gathered together in 1822 and the first graduates received their diplomas in 1825, but the official Alumni list shows the names of Alexander Ewell, of Virginia; Albert Fairfax, of Virginia, and James D. Knowles, of Rhode Island, as Alumni of the class of 1824.

It appears from the records that the Medical Department was not fully organized until 1825, but it is more than probable that medicine was taught from the beginning, as we find among the first professors, Dr. Thomas Sewell, Professor of Anatomy and Physiology and Dr. James M. Stoughton, Professor of Chemistry, Geology and Surgery, both of whom were elected in 1821; Dr. Thomas Henderson, Professor of Theory and Practice of Medicine in 1824; Dr. Nicholas Worthington, Professor of Materia Medica in 1824; Dr. Alexander McWilliams, Professor of Botany in 1824, (elected to the vacancy caused by the death of Dr. Craven.) It is altogether probable that these gentlemen were giving instruction in their respective branches before 1825.

A digression is permissible here to pay tribute to Professor Thomas Sewell and also to the Trustees for their wisdom in selecting him as the Senior Professor in the Medical Department. He became the bone and sinew of the school and from his published works alone we can gather the history of the Medical School prior to 1839. The Medical School became a complete department in 1825; Professor Thomas Sewell delivered the opening address on March 30th of that year, a copy of which is preserved in the United States Army Medical Library and also in the library of the Department of Medicine.

Just when this address was delivered, or where the original medical building was located, is unknown, but it is probable that it was on the College grounds. There is an old record to the effect that the first building occupied by the Medical School was erected by the Professors themselves, but the location is not given.

The first class to receive the degree of Doctor of Medicine was in 1826, there being seven graduates; and from this time up to and including 1834, classes were graduated yearly. From 1834 until 1839 there is no record of a continuance of the Medical School, but in June 1839, at the request of Professor Sewell, there was a meeting of physicians at his office, the object of the meeting being to consider the practicability of attempting to reorganize the Medical Department of Columbian College. There were present upon that occasion, Drs. Thomas Sewell, Thos. P. Jones, Harvey Lindsly, Thomas Miller, J. M. Thomas, J. F. May, J. C. Hall, and Frederick May. It was decided to reorganize, and the following gentlemen were elected to fill the chairs: Professor Sewell, Pathology and Practise of Medicine; Professor Thomas P. Jones, Chemistry; Professor Lindsly, Obstetrics and Diseases of Women and Children; Professor Thomas Miller, Chirurgery and Practise of Surgery; Professor J. W. Thomas, Materia Medica; Professor J. F. May, Anatomy and Physiology.

Dr. Sewell was elected President of the Faculty and Dr. May, Secretary. The Faculty decided to hold the lectures in a central section of the city and a committee was appointed to procure a satisfactory building. They at first decided upon the Purdy Building on Four-and-a-half street and Louisiana Avenue N. W., and signed a five-year lease for it, but before taking possession, it was deemed wiser to lease a building at the corner of Tenth and E streets northwest, from General Van Ness. Upon the payment of $100, Mr. Purdy released them from the contract for his building. The money for the rental of the Van Ness Building, ($600 per annum), was to be raised among the faculty.

The first catalogue was issued in August of that year, and spoke particularly of the facilities for work in Anatomy, Chemistry, Practise of Medicine and Surgery and also stated that the students would be required to perform operations upon the cadaver. The course began the first of March, and two courses of lectures were necessary to become eligible for the Degree of Doctor of Medicine. At this time, private articles of agreement of curious interest were entered into by the Faculty, as follows:

> "First. To exercise toward each other at all times a spirit of courtesy, kindness and forbearance.
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> Second. To endeavor to secure for each other as far as possible, the confidence and respect of the Medical Class.
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> Third. To impart to each other any suggestions and to give any advice which may be useful to the school or to themselves as individuals.
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> Fourth. To see that the opinions and doctrine of each Professor in his proper branch are not to be controverted or animadverted by any other Professor, and a spirit of deference and respect is to be cherished towards each Professor in all things which appertain to his particular branch, in which he is regarded as authority.

> Fifth. In case of the existence of any prejudice or misunderstanding between two or more members of the Faculty, it shall be our duty to bring about a satisfactory explanation and reconciliation. In the event of a failure to accomplish this, the case shall be referred to the Board of Trustees, whose decision shall be final and satisfactory to all the parties."
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> "The spirit of the foregoing agreement we consider as extending to our professional and private interest and character as well as our character and interest as Professors."

At a later date the following articles were added to the above:

> "WHEREAS, the harmony and personal confidence of members of this Faculty are considered indispensable to the permanence and prosperity of the Institution, it is therefore resolved that we cannot be too strict in the observance of these rules of propriety and etiquette, which should govern its Professors."
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> "*Resolved,* That every physician has a right to regard the individuals and families who have solicited him as their medical attendant as he would regard his own family, free from all interference of his professional brethren, and that it is unworthy of the purity and dignity of the physician, and especially of the Professor of the Medical College, where it becomes his duty to inculcate both precept and example of a correct system of medical ethics, to endeavor, directly or indirectly by himself or by the hands of another, to insinuate himself into the favor of any individual or family with a view of becoming their physician when such families or individuals have already selected their medical attendant."

The Faculty was evidently composed of very unselfish men, who were working to promote medical education because they thought it their duty and certainly not because of the pecuniary compensation, as is proved from the record of March 17, 1843. This record shows that at the close of the Dean's books for that year, there was but one hundred and twenty-six dollars and forty-five cents on hand, which was evenly divided among the six members of the Faculty. This is the first reference to their having received any compensation at all, while there are many recorded statements of assessments of the Faculty to raise the necessary amounts for the current expenses of the school.

On the 6th of November, 1843, a Medical Dispensary was opened in the medical building where clinics were given daily, except Sunday. On June 15, 1844, the following bill passed the United States Congress:

> "And it is further enacted, That the Commissioner of Public Buildings be directed to allow the Medical Faculty of the Colum-

> bian College, District of Columbia, to occupy the Insane Hospital, with the adjoining ground situated in the Judiciary Square in Washington, for the purpose of an Infirmary for medical instruction and for scientific purposes, on condition that they shall give satisfactory security to keep said building in repair and return it, with the grounds, to the Government, in as good condition as they are now in, whenever required to do so."

The Faculty took possession of this hospital July 1st of that year and called it the City Hospital. The school continued here until 1861, when the Faculty were required to return the building to the Government, and it was occupied as the United States Army Hospital until November 3, 1861, when the whole structure was destroyed by fire.

In April, 1845, the Medical School sustained a great loss in the death of Professor Thomas Sewell. On March 1, 1847, with the consent of the trustees, the name of the Medical Department was changed to that of the National Medical College. In 1861, there were graduated twenty-four students, among whom we find the name of one who is endeared to every graduate from this school in the past third of a century, and whom we sincerely trust an all-wise Providence will continue with us for many years to come. I refer to Professor A. F. A. King, for so many years Dean of the Department.

In the fall of 1861, having vacated the Government building, the School was removed to a building on E Street between Eleventh and Twelfth Streets N. W., known as the Constitution Office. On April 1, 1862, steps were taken to secure the building situated where our present medical building is now located. The Civil War being at this time in progress, several of the Faculty had responded to the call of their country and the number of the students was very small. As the result, it was deemed advisable to suspend during the course of the Session of 1863-'64.

On July 29, 1865, the Faculty reassembled when they were informed by the President of the University that Mr. W. W. Corcoran had presented the building located at 1325 H Street N. W., to the Medical School. But the War Department had possession of the building and refused to vacate it immediately. Lectures were therefore begun in the law building. On January 31, 1861, Dr. J. Ford Thompson was elected to fill the chair of Anatomy and Physiology. In July, 1866, Dr. A. F. A. King became adjunct to the Chair of Materia-Medica and the late Dr. D. W. Prentiss (father of our present Secretary), whom most of us remember so pleasantly, became adjunct to the Chair of Chemistry. At a meeting of the Trustees of the University on October 25, 1866 it was decided that all the members of the Faculty should be elected annually, to which the Medical Faculty demurred, and on October 27th, the Medical Faculty resigned in a body, but upon the request of the President, they agreed to withdraw their resignations.

On November 21, 1866, the building presented by Mr. Corcoran was formally accepted and the introductory lectures given therein. On July 10, 1872, the Chair of Surgery was committed to one who has so ably filled it up to the present time, Professor J. Ford Thompson.

It was necessary from time to time to make changes in the building to accommodate the increase in the number of students, but no great change was made until 1887, when the building was very much enlarged and the laboratory facilities greatly improved. Since leaving the City Hospital in 1861, the School had depended for clinical facilities upon the use of wards of the different hospitals throughout the city. For years efforts had been made to erect a hospital under the control of the Medical School, but not until 1898 were they successful, when a small hospital was opened where our new hospital now stands. As the school had grown so rapidly and the members of the Faculty were anxious to keep abreast of the times they deemed it advisable, under the leadership of our late Dean de Schweinitz, to have a more modern and larger Medical Building and Hospital, and therefore, the old building of both the Medical School and Hospital were replaced in 1902 by the commodious modern buildings now occupied by the Medical School and The George Washington University Hospital.

The Hospital, as you all know, is a modern and up-to-date building capable of accommodating one hundred patients. In the wards of this hospital our graduates of today receive their daily clinical instructions in all the branches of medicine and surgery.

On September 1, 1904, the name of the University was changed from the Columbian University to The George Washington University, a name which in itself makes it, so to speak, a national university and one which if properly fostered, as we all believe it will be, is destined to become one of the great universities of these United States. As the result of the wise policies of President Needham and the able leadership of Dean Phillips, our department is steadily advancing toward the realization of its high ideals and with enthusiasm and hope we face the future. The medical Alumni, we believe, are thoroughly loyal to their Alma Mater, and it is our duty to co-operate with each other in every way possible that banded together for large achievements, we may add to the prestige of our institution as a whole and contribute in no small measure to the success of the Medical Department of The George Washington University. If it succeeds, as it certainly will, we have done no more than our duty; if it should fail, then Fellow-Alumni, we are to blame.

SCIENTIFIC NOTES.

Dr. J. Ford Thompson, Professor of Surgery, has been granted a year's leave of absence and has presented his resignation, to take effect at the close of the session of 1906-'07. His colleague, Dr. A. F. A. King, formerly Dean of the Department of Medicine, characterizes the services of Dr. Thompson to the University as follows:

"It has become a common custom in this world to laud those who die. But why not extend our meed of praise also to the living? Certainly no man more fully deserves such commendation than our distinguished Professor of Surgery, Dr. J. Ford Thompson, who, after forty years of service, first as Professor of Anatomy and later as Professor of Surgery, has recently tendered his resignation of the latter chair. Succeeding the late Dr. Thomas Miller, Dr. Thompson began to lecture on anatomy in the University in 1865. A few years later (1872) he became Professor of Surgery and has continued to perform the duties of that chair until the session of 1905-'06, when he delivered his last course of lectures to the Medical Class."

"As a teacher of surgery, Dr. Thompson's method of instruction was pre-eminently practical. A fearless and skillful operator in all departments of surgical work, he was able to demonstrate the principles and methods taught in the lecture room by clinical examples in the several hospitals where, for so many years, he performed the duties of an attending surgeon. Always punctual and conscientious in the onerous duties of his university and hospital appointments, with a more than humane indifference to pecuniary reward, Dr. Thompson, in his retirement from the Medical Faculty, carries with him the unlimited esteem and affection of hundreds of students who have profited by and enjoyed his instruction, and also the warmest personal regard and best wishes of his colleagues in the Medical Faculty."

In connection with the paper appearing in this number on "Yellow Fever Investigations," it is interesting to note that as early as February, 1883, Dr. A. F. A. King, Professor of Obstetrics and Dean Emeritus, read before the Philosophical Society of Washington, a paper entitled "Insects and Disease, Mosquitoes and Malaria." (*Popular Science Monthly,* xxiii No. 5, Sept. 1, 1883). In his paper Dr. King presented a "series of facts—some of the best known and most generally established facts—with regard to the 'malarial poison' and showed how they may be explicable by the supposition that the mosquito is the real source of disease, rather than the inhalation or cutaneous absorption of marsh-vapor." Dr. King mentions Dr. Josiah Nott, of Mobile, Ala., who published in 1848 an essay on yellow fever, in which the mosquito is referred to as the probable cause of malaria and yellow fever,(*New Orleans Medical and Surgical Journal*, iv, 563-601, 1848).

Dr. Nuttall in a paper discussing the mosquito-malarial theory ("On the role of insects, arachnids and myriapods as carriers in the spread of bacterial and parasitic diseases of man and animal. A critical and historicl study." By Geo. H. F. Nuttall, M.D., Ph.D., Johns Hopkins Reports, Vol. VIII, 1899.) says:

"In 1883 a most elaborately stated argument was published by King, in which he brings together a mass of evidence on the subject, vastly more, in fact, than other authors have since gathered, and I shall often have occasion to refer to his paper. It is curious to look over the more recent literature on the subject to see how writers have rediscovered the mosquito-malaria theory. In France the theory is ascribed to Laveran, in Germany to Koch and Pfeiffer, in England to Manson, whilst in Italy the names of Bignami, Mendini and lastly, Grassi are identified with it. By far the most masterly theory was written by King." All of these other scientists made their announcements of this theory between 1891 and 1898. Dr. King did not claim to have proven his theory but hoped that others might be stimulated to establish it by experiment. In closing he presents means of prophylaxis against malaria by protection against mosquitoes and their destruction—means which hold today.

Dr. George N. Acker, Professor of Pediatrics and of Clinical Medicine, has a suggestive paper in THE AMERICAN JOURNAL OF OBSTETRICS, October, 1905, on "The Diagnosis and Treatment of Pneumonia in Children." He believes that a patient with pneumonia, as those suffering from other diseases of the lungs, should have a large amount of fresh air. Many (this includes some physicians) appear to consider it a sin to allow any fresh air in the sick-room, but think that the little one must be kept in a hot, close room with woolen goods or cotton jacket about the chest. In a case in which the author was a consultant last winter, the infant was in a room 15 by 17 feet. There were four persons present, and a large gas stove helped to heat the room. The temperature was about 80 degrees F. and the windows were closed. The little patient was enveloped in heavy clothing. There was marked respiratory dyspnea and cyanosis. The child was dying for want of fresh air. The physician in charge was a capable man, and he explained to the author that it was impossible to get the parents to observe the proper hygienic measures.

The diet is of the greatest importance, for the digestive organs must be kept in good condition. If the temperature of the child is high, sponging with cool or tepid water will allay the nervous symptoms and promote rest. Small doses of the sweet spirit of nitre or solution of acetate of ammonia (if neutral) will have a good effect on the fever, but the coal-tar preparation must not be used for this purpose. Expectorant medicines are not of any, or are of little, value in the disease, and often impair the digestion. The carbonate of ammonium and aromatic spirits of ammonia are at times useful as respiratory stimulants. Alcohol and strychnine will be necessary in many cases when the vital forces are on the wane. If the cough is harsh and dry, the air should be kept in a moist state, and the croup kettle (with compound tincture of benzoin in the water) is admirable for this purpose. Unless the cough is very troublesome it does not require treatment, and certainly one must be cautious in the use of opium, for if given to relieve cough it interferes with the secretions and embarasses the respiration. It is necessary for the patient to cough to remove the mucus from the bronchial tubes. A teaspoonful of hot water will often have the effect of quieting the cough. A mild mustard plaster is often of service. The chest can be rubbed with camphorated oil or Roche's embrocation, this latter being a favorite application with the author. It is a fad at the present time to apply clay preparations to all the ailments of the body; but as the author has observed blisters produced by the application of one of these on several infants he warns against their use—he has never noted any good from them in cases of pneumonia.

The heart's action and the skin must be watched, and if the former shows any signs of fatigue or the latter any cyanosis, increased stimulation must be resorted to and warm mustard baths and dry cups may be employed.

Beverly Robinson, who has paid considerable attention to the prevention of pneumonia, has observed that the micrococcus lanceolatus is one of the least tenacious of life among the pathogenic microörganisms, and that it does not thrive in an acid medium; therefore, he recommends the frequent use of acid mouth washes in times when the disease is prevailing. The sputum, stools, and urine of the patient should be destroyed, and the mouth washed frequently with an antiseptic solution. The antipneumococcic sera have not been found to have any marked benefit, though some have thought that there has been a slight reduction in the mortality shown. Even those who have given the serum in large doses have not been able to report any great success. One of the prime factors in the treatment of pneumonia is to watch the condition of the stomach and bowels, for in nearly every case there is great disturbance of these organs. The food must be such as will easily digest and cause no fermentation. If the stomach and bowels keep in good condition, the battle is half won. Milk should be diluted and not given in too large quantity at a time. The child should be fed at regular intervals, and plenty of good water given. The bowels should be opened at the commencement of the disease with castor oil or calomel, and afterward kept open by enemata.

Dr. D. Kerfoot Shute, Professor of Anatomy and of Clinical Ophthalmology, has just published in the NEW YORK MEDICAL JOURNAL for August 18 and 25, an article entitled, "A Model for a New Ophthalmotrope; the Gonioscope. Some Phases of Ocular Motility." In this article he describes a model for a new ophthalmotrope, which he constructed and exhibited before the Society of Ophthalmologists and Otologists of Washington, D. C., and also before the Medical Society of the District of Columbia.

Unlike all other existing ophthalmotropes, Dr. Shute's model is based upon the principle of diversity instead of community of the axes of rotation for the superior and inferior recti muscles and for the oblique muscles. His ophthalmotrope is for the purpose not only of studying the physiological movements of the eyes, but also for investigating pathological rotations of the eyes. All current text books upon physiology and ophthalmology adopt the theory of community instead of diversity of axes of rotation, and thus bring the teachings of physiology and ophthalmology into inexplicable conflict with the whole clinical experience of the past in diseases of ocular motility. Dr. Shute's model demonstrates with precision and ease the accuracy of this vast clinical experience accumulated by the masters in ophthalmology during the last three or four decades. His studies in ocular motility led him to devise a simple apparatus for which he coined the name gonioscope (*gonia* angle; *skopeîn* to view). This instrument is for the purpose of noting the varying angles made by the optic axis (in different positions of adduction and abduction of the eyes) with the lines of force (muscle lines) of the two oblique muscles and of the superior and inferior recti muscles, and for aiding, therefore, in understanding the theoretical effects of contraction of a single one of the above-mentioned muscles; all of which is a necessary preliminary to a correct appreciation of the symptoms of a single ocular muscle when paralyzed.

Dr. Shute states in his article that the ophthalmotrope and gonioscope devised by him were the outcome of his own difficulties in the study of ocular motility—one of the most complicated and involved subjects in the whole range of ophthalmology. Because the facts of physiological as well as pathological ocular motility are so difficult for the average student, and even for many ophthalmologists to understand. Dr. Shute has also published in his article several (four) original diagrams, illustrating ocular rotations. For details upon the subject, the reader is referred to the article in the NEW YORK MEDICAL JOURNAL.

Dr. Sterling Ruffin, Professor of The Theory and Practice of Medicine and of Clinical Medicine, in the April, 1906 number of the *American Journal of the Medical Sciences*, reports at length on "Hodgkin's Disease, Study of a Case with Relapsing Fever," accompanied by the clinical chart. Before entering upon the description of his own case, Dr. Ruffin reviews the history of Hodgkin's disease and discusses its pathology recently found by Dorothy Reed, by Longcope and others, to be distinctive; also the symptoms, diagnosis, and course of the disease. The patient, a man, twenty-four years of age, was admitted in the fall to the open wards of the University Hospital where he was carefully studied by physical and laboratory methods. The most remarkable feature he presented was the temperature curve which showed during the four months and a half he was in the hospital periodic pyrexias alternating with remissions of fever. A mild infection with uncinaria Americana was found. The necropsy with study of the tissues and organs, revealed the distinctive pathology mentioned and confirmed the work of Reed and of Longcope. Two photomicrographs of lymphnodes illustrate the paper.

Dr. Charles W. Richardson, Professor of Laryngology and Otology, is preparing for the Fraenkel number of THE LARYNGOSCOPE in conjunction with other teachers, an article entitled, "The Teaching of Laryngology in the Medical Department of The George Washington University." Dr. Fraenkel has charge of the throat and nose department of the University of Berlin and is one of the most distinguished teachers in this line in the world. THE LARYNGOSCOPE, the leading scientific journal in its field in this country, is publishing what is called the Fraenkel number, in commemoration of the fiftieth anniversary of Dr. Fraenkel's life as a teacher. This number is to appear the first of November. In the September number of THE LARYNGOSCOPE Dr. Richardson had a paper on "Further Research in Perforation of the Septum Naris." The international clinic will soon publish an article by him on "Mastoid's Operation," with illustrations."

Practise of Gynecology, in Original Contributions, by American Authors. Edited by J. Wesley Bovée, M.D., Professor of Gynecology, George Washington University, Washington, D. C. Illustrated with 382 engravings and 60 full-page plates. Cloth. Pp. 836. Price $6.00 net. Philadelphia; Lea Brothers & Co., 1906.

The above volume, edited by J. Wesley Bovee, M.D., Professor of Gynecology in this University, with contributions from him and six other American physicians, has met with a most favorable reception from the medical profession. Dr. W. Easterly Ashton, of Philadelphia, in a private letter, speaks of it as follows:

"I want to congratulate you upon the character of the book, as it thoroughly represents the most advanced work in gynecology and at the same time it possesses the very important feature of positive teaching, so frequently absent in surigcal works."

The AMERICAN JOURNAL OF SURGERY says:

"This volume forms the first of a series of three, which respectively will cover the subject of gynecology, obstetrics and pediatrics. Unlike most collaborations, it shows neither repetitions nor omissions, and the exposition throughout is uniform and smooth. The aim of the book is eminently practical, but quite sufficient regard has been accorded to theory, pathology and bacteriology. * * * * * * * * * * * * * * The seven contributors have succeeded in presenting a volume of sterling worth, well balanced, concise and instructive. The illustrations, with very few exceptions, are of the first order, and in most instances are original. The plates showing the successive steps of important operations elucidate the technic more plainly and more instructively than can many pages of text. The typography and the general appearance of the book leave nothing to be desired."

The JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION says:

"Within the limits set by the editor the work is, as a whole, interesting and commendable and in its execution a credit to the publishers. Because of its practical, as well as its scientific, character, it should prove a popular text-book for students and a valuable, concise hand-book for the general practitioner."

Dr. James Carroll, Professor of Bacteriology and Pathology will contribute the article upon "Yellow Fever," to appear in Volume 2, of "*Modern Medicine,*" a monumental work in seven octavo volumes of 900 pages each to be edited by Dr. William Osler and published by Lea Brothers. The prospectus has just been issued. The various subjects are treated by eminent American, British and Continental authors. Dr. Carroll also contributed the section on "Gelbfieber" (Yellow Fever,) in the "Handbuch der Tropenkrankheiten," a work in three octavo volumes, edited by Dr. C. Mense, of Kassel, and published in Leipsic, 1905. It is an exhaustive presentation of our present knowledge of tropical diseases. It has recently been translated from German into Italian. Dr. Carroll's relation to yellow fever investigations is ably treated in Dr. Donnally's paper in this number.

Dr. Francis R. Hagner, Clinical Professor of Genito-Urinary Surgery and Venereal Diseases, had a paper in the *American Record* of October, on "Operative Treatment of Acute Gonorrheal Epididymitis;" also one on "Tuberculosis of the Bladder and a plea for early diagnosis," in the *Virginia Medical Semi-Monthly,* August 10, 1906.

Dr. J. B. Nichols, Professor of Histology, has made a study of the subject of feeding in typhoid fever, as the result of which he disagrees with the generally accepted plan of a practically exclusive milk or so-called "liquid" diet and advocates the employment of a more liberal and varied diet than that in general use.

On the basis of published metabolism and digestion studies in actual cases, he has endeavored to work out the theory or principles of typhoid dietetics on the same basis and the same kind of data as have served for the scientific establishment of the recognized principles underlying dietetics in health and infant feeding. By these methods he has determined a standard for feeding typhoid fever patients (2,000 calories of energy and 100 grams of proteid daily) that may be accepted tentatively until further investigations directly to this end may fix it definitely. Digestion experiments were found to show that, contrary to the prevailing belief, the digestive powers in typhoid fever are on the average lowered only five to ten per cent. Consideration of other factors seemed to show that the present fears and objections to soft and solid food are unfounded, and that a mixed diet really is less objectionable than the "liquid" diet now in use.

The actual results of varied and generous feeding in typhoid fever were found to corroborate the conclusions derived from theory. Patients so fed were more comfortable, convalesced in a much shorter time, showed none of the harmful consequences generally feared, and displayed greater resisting power against the disease, as manifested in some comparative series by a difference in mortality of two per cent. in favor of liberal feeding.

Dr. Nichols's paper on the general subject of typhoid dietetics was published in AMERICAN MEDICINE, May 6, 1905, IX, pp. 726-736.

He has also made a study of the historical development and basis of present dietetic methods in this disease (published in the MEDICAL RECORD July 29, 1905, LXVIII, pp. 171-174). He believes that the present methods have developed in a fortuitous and empirical way; have not been based on or subjected to the critique of modern physiologic and dietetic principles; and that there is involved in the present prevalent doctrine a surviving vestige of the ideas that characterized the exploded ancient theory and practice of antiphlogistic therapy.

In the AMERICAN JOURNAL OF THE MEDICAL SCIENCES for July, 1905, CXXX, 120-125, Dr. Nichols gives the first detailed report of a case of protozoa in the stomach occurring in this country. He found only twenty-two other cases of the kind on record, a study of which shows that this condition is to be regarded as a probable evidence of non-obstructive carcinoma of the stomach.

Dr. Nichols has also prosecuted some statistical studies of the relative proportions of the sexes at birth. In a paper published in the AMERICAN ANTHROPOLOGIST, 1905, VII, pp. 24-36, he gives the statistics of the numbers of sons and daughters in 3,000 families of six or more children each, from which it appears that the actual distribution of the sexes corresponds with practical exactness to what would be expected from the operation of the laws of chance.

In another study (not yet published) he has collected the statistics of over 700,000,000 births, from which are gathered the relative numbers of males to females born, in living births, stillbirths, and multiple births, in the different countries, among various races, and in connection with such conditions as legitimacy, etc.

The students of the medical department, by the courteous invitation of the Medical Society of the District of Columbia, were given the privilege of listening to the address of Sir Almroth E. Wright, M.D., F.R.S., late Professor of Pathology, Army Medical School, Netley, and at present Pathologist to St. Mary's Hospital, London, before that body on October 12, 1906, at a special meeting called for the purpose.

Dr. Wright's subject was, "Principles of the Treatment of Bacterial Diseases by the Inoculation of Corresponding Vaccines," and for one hour he held the undivided attention of the large number assembled to hear him. In the first part of his discourse he showed that the two plans pursued by the medical profession up to the present time in the treatment of bacterial infections, namely, (1) the use of strong medicines, and later (2) the expectant plan with rest, hygiene, diet and such stimulation as might be needed to keep the heart going, were wrong in principle according to our present knowledge, and were destined never to reach such cases as the ten per cent. of typhoid patients nor the ninety per cent. of plague patients who die, nor the strong man laid by for a year or two in an attack of Malta fever, nor those patients with localized infections such as bone and joint tuberculosis, uterine discharges, lupus, acne, furunculosis and so on. He illustrated further at some length the inefficiency of the present expectant treatment and of local treatment with antiseptics.

Proceeding, he showed that it was within our power to take advantage of the immunizing apparatus with which the animal ecomony is equipped, by inoculation of dead cultures of the infecting bacterium and thus increase the power of resistance of the individual to the invader so that the disease may be overcome. The application of this procedure offers many obstacles to its successful practice. Although Dr. Wright omitted discussion of technique, the major portion of his address was devoted to explaining the effect of these inoculations and the resultant reaction of the individual. He pointed out the necessity of frequent, tedious blood examinations to determine the opsonic index and from this the suitable time for administration, as essential to the intelligent employment of the method.

"Opsonins" are chemical substances in blood serum which sensitize bacteria so that the leucocytes will engulf and destroy them (bacterial phagocytosis). In normal individuals the opsonic power of the blood varies within exceedingly small limits, and the average number ingested by the normal leucocyte is used as a standard and called one. In infections the leucocytic phagocytosis usually differs from the normal, being greater or less, the ratio to the normal phagocytosis expressed numerically is called the "'opsonic index." A high opsonic index is always more than one; a low opsonic index less than one. Without the knowledge of the effect of the inoculations, harm rather than good is likely to result. Schematic charts were used to elucidate the theory, and charts of actual cases in which Dr. Wright had employed it.

This led to the last part of the address, in which Dr. Wright told of some of his remarkable results. A case which seemed to appeal to his audience more than others was one of "infective endocarditis" in a young woman, secondary to a severe angina, which was regarded by the physicians and surgeons in attendance as hopeless. Both sides of the heart were involved. For weeks she ran an exceedingly high temperature, and the end seemed only a question of a short time. Dr. Wright was called in at this juncture. His first move was to make a blood culture, which resulted in the isolation of a streptococcus from the circulating blood. Then he determined the opsonic index of her blood for this organism. Material for injection was prepared with this bacterium also. Her first inoculation was 5,000,000 dead streptococci of the strain isolated from her blood. By similar inoculations with frequent determinations of opsonic index to guide him, the young woman got well and is living to-day.

Other cases described, showing brilliant results, were pulmonary and joint tuberculosis, lupus, empyema, gonorrheal arthritis, sycosis, acne and chronic furunculosis.

Dr. Wright is a fluent, easy speaker, and such a master of his theme that this complex subject seemed simple as he logically and rapidly unfolded it.

UNIVERSITY APPOINTMENTS.

Beginning with the Academic Year, 1906-07.

Acting Dean of the Department of Politics and Diplomacy, November 1, 1906: CHARLES WILLIAM AUGUSTUS VEDITZ, Ph. D.

Ph.B., University of Pennsylvania, 1891; Graduate courses in Economics and Public Law (in Germany), 1891-'95; Halle University, 1891-'93; Berlin, 1893-'94; Leipzig, 1894-'95; Ph.D., (1895), Halle University; Studies in France in Sociology, History and Public Law, Ecole de Droit, 1896-'99 (licencié en droit); Ecole des Hautes Etudes, 1896-'97; Ecole d'Anthropologie, 1896-'98; Sarbonne, 1897-'98; Collège de France, 1898-'00; Collège libre des Sciences Politiques, 1898-'99; Collège libre des Sciences Sociales, 1898-1900. Fellow in Sociology, University of Pennsylvania, 1901; Professor of Economics and History, Bates College, Lewiston, Maine, 1901-'04. Lecturer on Sociology, Bangor Theological Seminary (Maine), 1904-'05; General Secretary and Staff Lecturer, University Extension Society of Maine, 1903-'05; Secretary American Sociological Society, 1906; Editor-in-Chief, Bulletin of the American Economic Association, 1906; Member, American Economic Association, American Academy of Social and Political Science, Council of National Economic League, American Sociological Society, Institute International de Sociologie, Internationale Vereinigung für vergleichende Rechtswissenschaft, etc. Professor of Economics, the George Washington University, 1905.—

DEPARTMENT OF ARTS AND SCIENCES.

COLUMBIAN COLLEGE.

Professor of Botany: ALBERT MANN, Ph. D.

Ed., Wesleyan University; B.A., ibid, 1879; M.A., ibid, 1882; student in University of Munich, 1892-1894; Ph.D., ibid, 1894; research work, ibid. 1900-1901; Professor of Botany, Ohio Wesleyan Univ., 1895-1900. Expert, Department of Agriculture, stationed at Washington, D. C., 1906.

Librarian of the Department of Arts and Sciences and Assistant Professor of German: ALFRED F. W. SCHMIDT, A.M.

Ed., Mt. Angel College, Oregon, 1889-'91; A.B., Leland Stanford, Jr., University, 1895; A.M., honoris causa, Mt. Angel College, 1900; Asst. in the University Library, Leland Stanford, 1894-'97; Assistant and Instructor in Anglo-Saxon, ibid., 1896-'97; Instructor in German, ibid., 1897-1900; Head Classifier, University Library, ibid., 1900-'01; Assistant Librarian, ibid., 1901; Asst. in Classification Catalogue Division, Library of Congress, 1902-'06; Instructor in German, The George Washington University, 1905-'06.

Assistant Professor of Mathematics: PAUL NOBLE PECK, A.M.

Ed., Emerson Institute, Washington, 1890-'98; A.B., The George Washington University, 1904; A.M., ibid., 1905; Principal, Paducah Preparatory School, 1902-'03; Assistant in Greek and Latin, The George Washington University, 1904-'05; Instructor in Mathematics, ibid, 1905-'06.

Assistant Professor of English: T. DeWitt Croissant, A.B.

Student, Columbian College, 1895-'97; A.B., Princeton University, 1899; Graduate Student, University of Chicago, 1899-'01; Instructor in English, University of Colorado, 1901-'02; Fellow, Princeton University, 1902-'03; Student, University of Munich, 1903-'04; Instructor in English, The George Washington University, 1905-06.

Instructor in History: James Frederick Peake, A.M.

A.B., Randolph-Macon College, 1902; A.M., The George Washington University, 1904; Instructor in Greek, Randolph-Macon College, 1901-'02; Teacher of Latin and English, Randolph-Macon Academy, 1902-'03; Assistant in English, The George Washington University, 1904-'05.

Adviser of Women and Instructor in English: Harriett Stratton Ellis, A.B.

A.B., Woman's College, of Baltimore, 1892.

Instructor in Chemistry: Walter Otheman Snelling, M.S.

B.S., The George Washington University, 1904; B.S., Harvard, 1905; M.S., Yale, 1906.

Instructor in Mathematics: George Albert Ross, A.M.

A.B., William Jewell College, 1893; A.M., The George Washington University, 1898.

WASHINGTON COLLEGE OF ENGINEERING.

Instructor in Civil Engineering: Oscar A. Mechlin, C.E.

B.S., Dartmouth College, 1903; C.E., The George Washington University, 1906; Assistant Engineer, District of Columbia, 1904-'06.

Instructor in Mechanical Engineering: A. C. Willard, B.S.

B.S., Massachusetts Institute of Technology, 1904; Principal, University School, San Francisco, 1904-'06.

Instructor in Physics and Electricity: Everett W. Varney, A.B.

A.B., Bowdoin College, 1899; Assistant in Physics, ibid, 1898-'9.

Instructor in Electrical Engineering: T. F. S. Maguire, B.S.

B.S., Massachusetts Institute of Technology, 1897.

DEPARTMENT OF MEDICINE.

Professor of Nervous Diseases: Charles H. Clark, M.D.

M.D., Starling Medical College, Columbus, Ohio, 1893; House Physician, St. Francis' Hospital, Columbus, Ohio, 1893-1894; First Assistant Physician, Ohio Hospital for Epileptics, Gallipolis, Ohio, 1894-1897. Second Assistant Physician, State Hospital for Insane, Columbus, Ohio, 1897-1898. First Assistant Physician, State Hospital for Insane, Massilon, Ohio, 1898-1899. Second Assistant Physician, Government Hospital for Insane, Washington, D. C., 1899-1906. Clinical Director, Government Hospital for Insane, Washington, D. C., since April 1, 1906.

Professor of Morbid Anatomy: ISAAC WRIGHT BLACKBURN, M.D.

M.D., University of Pennsylvania, 1882; Pathologist to Government Hospital for the Insane, since 1884; Lecturer on Pathology of Mental Diseases, The George Washington University, 1885-'86; Professor of Pathology, ibid, 1886; Professor of Pathology and Histology, ibid, 1889; Professor of Morbis Anatomy and Special Pathology, ibid, 1898;

Member of the American Medico-Psychological Association, Corresponding Member of the Philadelphia Pathological Society; Member of the American Association for the Advancement of Science, and other medical and scientific societies.

Professor of Physiology: SHEPHERD IVORY FRANZ, Ph.D.

A.B., Columbia University, 1894; Fellow, 1895-'99, and Ph.D., ibid, 1899; Assistant in Physiology, Harvard Medical School, 1899-1901; Instructor in Physiology, Dartmouth Medical College, 1901-'04; Pathological Physiologist, McLean Hospital, the Insane Department of Massachusetts General Hospital, 1904-'06; Research Assistant, Carnegie Institute of Washington.

DEPARTMENT OF LAW AND JURISPRUDENCE.

Professor of Law: EDWARD S. THURSTON, A.M., LL.B.

A.B., Harvard University, 1898; A.M., ibid, 1900; LL.B., ibid, 1901; practised law in New York City, 1901-'06; Instructor in Law, Indiana State University, 1906.

Professor of Law: W. C. DENNIS, A.M., LL.B.

A.B., Earlham College, Richmond, Ind., 1896; A.B., Harvard University, 1897; A.M., ibid, 1898; LL.B., ibid, 1901; Secretary, Lake Mohonk Conference on International Arbitration, 1901-'02; Instructor in School of Law, University of Illinois, 1902-'03; Assistant Professor of Law, ibid, 1903-'04; Assistant Professor of Law, Stanford University, 1904-'05; Adjunct Professor of Law, Columbia University, 1905-'06; Assistant Solicitor, Department of State, 1906.

UNIVERSITY MISCELLANEA.

At the celebration of the hundredth anniversary of the founding of the University of Aberdeen, the degree of LL.D. was conferred upon Professor Frank Wigglesworth Clarke, Professor of Mineral Chemistry in the Faculty of Graduate Studies.

Professor Charles E. Munroe has been appointed superintendent of the special alcohol exhibit of the Jamestown Exposition. This appointment was made in recognition of Professor Munroe's standing as a chemical expert.

Professors Yarrow, Carroll, Bovée and Ruffin attended the meeting of the British Medical Association in Toronto last August.

Dr. Yarrow, Professor of Dermatology, was official representative of the University at the opening of the new Harvard Medical School Buildings September 26. Dr. A. F. A. King, Professor of Obstetrics, also was present as the official representative of the University of Vermont.

Dr. George N. Acker, Professor of Pediatrics, delivered the president's address before the Washington Gynecological Society October 5, 1906. His subject was "The Etiology and Treatment of Nervousness in Infancy and Childhood." Dr. Acker was made a member of the Council of the Pediatric Society in May, 1906.

Professor James Brown Scott has issued a prospectus announcing the forthcoming American Case-Book Series, which is to contain collections of cases on thirty of the principal topics now taught in American law schools. These collections of cases are to be prepared by teachers in the different law schools of the country, under the general editorial supervision of Professor Scott. The series will be published by the West Publishing Company, of St Paul, Minnesota.

Professor Scott, who was last March appointed Solicitor of the Department of State, is also to be editor of the American Journal of International Law, the publication of the recently established American Society of International Law. The first number is expected to appear in January.

At the recent meeting of the Association of American Law Schools, held at St. Paul, Minnesota, August 28-30, Professor William R. Vance, Dean of the Department of Law and Jurisprudence, was elected Secretary of the Association for the ensuing year.

Partly in recognition of his services in organizing the American Sociological Society, Professor C. W. A. Veditz, Acting-Dean of the Department of Politics and Diplomacy, has recently been elected a member of the International Institute of Sociology, an honorary organization with narrowly limited membership. Only seven Americans enjoy the distinction, among them Lester F. Ward, Franklin W. Giddings, Carroll D. Wright and Albion W. Small.

At the recent annual meeting of the Medical Society of Virginia, Doctor Bathurst Brown Bagby, '04, read a paper on uncinariasis, or hookworm disease, in Virginia. He presented several patients so affected. Dr. Bagby's cases are the first recognized in the medical history of the state. The appreciation of Dr. Bagby's original contribution was recognized by his election as first vice-president of the Society for 1907. This is an honor never before conferred on so young a member.

The first Fall Convocation of the George Washington University was held on Wednesday, the 17th inst., in Memorial Continental Hall. The purpose of this convocation is to bring together the new and old students of the University and to afford an opportunity for the conferring of degrees upon students who have completed the requirements, but who were prevented from taking part in the regular commencement exercises. The speaker on this occasion was Dr. Carl Beck, Professor of Surgery in the Postgraduate Medical School, University of the State of New York, and President of St. Mark's Hospital, of New York. The subject of his address was, "The Influence of American Medicine and Surgery on Europe," which we take pleasure in publishing in this issue. Dr. M. Ross Fishburn, Pastor of the Mt. Pleasant Congregational Church, acted as Chaplain of this occasion. Degrees were conferred on a number of candidates and debate medals were awarded to successful contestants of the last session.

The *University Hatchet*, our weekly newspaper, is now strictly under student control, as the financial interest in the publication held by individuals has been bought, and the ownership is now vested in a corporation known as "The University Hatchet." The corporation consists of five students and two professors appointed for the first session by the President of the University, namely: Messrs. Wilson, Gates, Call, Moore and Russell, and Professors Carroll and Vance. At a meeting held in June the Board of Editors elected Mr. Robert I. Moore, Editor-in-Chief and Mr. Arthur J. Russell, Business Manager for 1906-'07. Mr. E. P. Gates is Chairman of the Board.

The University Library has been enlarged during the summer both in quarters and in equipment. The entire north end of the first floor, with the exception of the President's office, has been remodelled and adapted to library purposes. The Germanic library of the late Professor Richard Heinzel, of the University of Berlin, which was purchased by the University last spring, has been received and installed on the library shelves. This library contains 7,200 volumes and pamphlets bearing on German philology and literature and a large number of works and periodicals in cognate branches, especially Anglo-Saxon, Old English, Romance and Slavic languages. Dr. A. F. W. Schmidt, formerly of the Stanford University library staff and of the Library of Congress, recently appointed Librarian, is now engaged in making a catalogue of this important collection of books.

At the annual meeting of The George Washington University Medical Society held in May, 1906, the following officers were elected for the present year: President, Dr. J. W. Chappell, '81; Vice-President, Dr. H. T. A. Lemon, '96; Secretary, Dr. D. W. Prentiss, '99; Treasurer, Dr. L. H. Taylor, '03; Council, Drs. A. Barnes Hooe, '06, H. C. Yarrow, J. Lewis Riggles, '00, T. V. McLaughlin, '82, Thomas A. Groover, '98. The initial meeting of this session was held on Saturday evening, October 20th, in the Medical Building. Dr. Chappell, the President, was in the chair and about eighty members were present. After a brief address by President Needham, the principal paper of the evening was read by Dr. Medford, on "Tetanus: Report of a Case with Recovery," which elicited considerable discussion. Dr. Carr exhibited a bone drill and a bone saw of his own invention. Dr. White presented a brief note on the application of a plaster cast to an open wound. After adjournment the members enjoyed an informal smoker.

The energy and enthusiasm of the University Medical Society is a source of gratification to the whole University. Organized just one year ago with Dr. Hooe as President, it has grown in interest and effectiveness until it now numbers one hundred and twenty members. The majority of the papers presented in this issue of the Bulletin were read before the Society.

The academic year began in Columbian College with a schedule of 219 class and laboratory periods each week. The following appointments have been made on the Faculty:

Albert Mann, Ph.D., Professor of Botany; Alfred F. W. Schmidt, A.M., Assistant Professor of German, and Librarian of the Library of Arts and Sciences; James Frederick Peake, A.M., Instructor in History; Walter Otheman Snelling, M.S., Instructor in Chemistry; Harriett Stratton Ellis, A.B., Adviser of Women and Instructor in English; George A. Ross, A.M., Instructor in Mathematics.

Very important in the College work is the appointment of Miss Ellis as Adviser of Women. She is a graduate of the Woman's College of

Baltimore in the class of 1892. Since her graduation she has been engaged in teaching young women. She has been a successful teacher and administrator. She has twice taken parties of young ladies to Europe for travel and study. She will have in her care the interests of the women students in Columbian College. She has an office in the University Building, and is a member of the College Faculty, offering courses of study open only to the women students. Her appointment is a recognition of the distinctive element of femininity in the education of women.

A modification in the required Freshman work in English goes into effect this year. It is the introduction as a part of that work of a course in Philosophy—the first half-year Logic, the second half-year Descriptive Psychology—furnishing a basis for the scientific study of rhetoric in the study of the laws of thought and mental phenomena. This is taken in addition to the study of rhetoric and the writing of themes throughout the year.

There are modifications and important improvements in various departments of study. A new laboratory has been fitted up for Zoology and Botany, and the Professors in these subjects are offering jointly a course of lectures in Comparative Biology. Professor George L. Raymond is giving a course of lectures on Wednesday afternoons through the first half-year, on the "Influence of Art Upon Human Discipline and Development." The various Teachers' Courses are all well attended and the results attained in this work would have demonstrated the wisdom of making certain lines of University study available to the teachers in the public schools.

The Washington College of Engineering has opened with a larger enrollment than during the previous session. All work in drawing, in the shops, and in the engineering laboratories, and nearly all of the classroom work is now given at Van Ness House, on the new site of the University. Regular shop-work is now a required part of the course, and during the present session a course in wood-work, including patternmaking will be given, and metal work will be added next year. Van Ness House having proven too small for the work of the College, an annex was constructed during the summer in which to house a boiler, an engine, a dynamo and a gasoline engine, which are among the gifts recently received.

Four new instructors have been added this year: Mr. O. H. Mechlin, C.E., Instructor in Civil Engineering; Mr. A. C. Willard, B.S., Instructor in Mechanical Engineering; Mr. T. F. J. Maguire, B.S., Instructor in Electrical Engineering, and Mr. E. W. Varney, A.B., Laboratory Instructor in Physics and Electricity.

Recent gifts to this College are gratefully acknowledged:—

From Mr. Bernard R. Green, Chairman of the Board of Trustees, a forty-horse-power boiler; from the Washington Loan and Trust Company, a dynamo, an engine, an elevator cylinder, a steam pump and tanks, and a collection of miscellaneous pieces for use in the steam engineering laboratory; from the Standard Underground Cable Company, a sample board of cables and wires; and from Mr. A. S. Riddle, Electrician of the Post-office Department, one Eddy motor.

In the Department of Medicine, Dr. W. P. Carr, for a number of years Professor of Physiology and Clinical Professor of Surgery, has been appointed Acting Professor of Surgery, to fill the vacancy caused by the leave of absence granted Professor J. Ford Thompson. Dr. Carr will probably, at the expiration of Dr. Thompson's leave of absence, at which time he has tendered his resignation, be appointed Professor of Surgery.

The vacancy in the Chair of Physiology will be filled during the current session by Dr. Shepherd Ivory Franz. Dr. Franz received his degree of A.B. from Columbia University, New York, in 1894. He took his Doctor of Philosophy Degree at the same institution in 1899. He was a Fellow in Columbia University from 1895 to 1897, and an assistant in Psychology from 1897 to 1899. He was at Harvard Medical as an assistant in Physiology from 1899 to 1901. From Harvard he went to Dartmouth Medical College and was Instructor in Physiology in 1901-04. Since 1904 to the present he has been Pathological Physiologist at McLean Hospital, the Insane Department of Massachusetts General Hospital. He is research Assistant of Carnegie Institute, and has received a grant for carrying on original work. Dr. Franz has done a great deal of original research and his results have been published in the American Journal of Physiology, Psychological Review and other scientific publications. He comes to the school highly recommended as an excellent and interesting teacher. He will devote his entire time to Physiology. Dr. Chas. A. Clark, Chief Medical Officer of the Government Hospital for the Insane, has been elected Professor of Nervous Diseases. Dr. Clark has had considerable experience as a teacher and his long connection with the Government Hospital and other institutions admirably equip him for the work of this department. Dr. I. W. Blackburn, for many years well known to the medical profession as Pathologist to the Government Hospital for the Insane, has been elected Professor of Morbid Anatomy. In this important department he will undoubtedly prove an acquisition to the teaching force of the School.

Some noteworthy changes in the work of the Department of Law and Jurisprudence were made at the close of the last session. The most important of these is the differentiation between those students who devote their whole time to the study of law and those whose employment in the Government service or elsewhere precludes their attendance upon any lectures until the late afternoon. Heretofore the program of work arranged for candidates for the degree of Bachelor of Laws was so ordered that all of the lectures required for that degree could be taken after 4:30 P. M. and within the three years set by the Association of American Law Schools as the minimum time requirement for candidates for this degree. Experience proved what might have been easily expected; that those students whose employment outside the University consumed a greater part of the time were unable to carry successfully the amount of work that, under modern standards, is reasonably required for the degree of Bachelor of Laws. Therefore, in order to secure to this class of students, which has always been numerous in Washington, the advantages of a sound and thorough training in the law, it was decided to permit them to take only three-fourths of the work required each year of the students devoting their whole time to their legal studies. This end is accomplished by giving in the afternoon only nine of the twelve hours of work required each year. Six hours of the lectures for each year will be given in the forenoon. By altering the subjects given in the forenoon and afternoon respectively, students who can attend only afternoon classes will be enabled in four years to complete the amount of work required for the degree.

This change puts this department on a basis of full day work, and will enable the Faculty to fix the standard of work, both as to extent and as to thoroughness, at a level equal to that now maintained by the leading law schools of the country.

The so-called "case method" of law teaching grows in favor, both with the members of the Faculty and with the student body. Collections of cases are now used as the basis of instruction in most of the subjects taught.

The graduate courses offered to students who are candidates for the degree of Master of Laws have been greatly extended, and increased by the addition of courses in Taxation, Extraordinary Legal Remedies, Railway Law, Brief Making, Spanish-American Law and Mortgages. In addition to these, Professor Scott is conducting a weekly seminary in International Law. These graduate courses are intended chiefly to meet the needs of the increasing body of students who come to Washington after graduation in law from the various State universities with the purpose of taking advanced work in law in this University.

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EDITORIAL NOTE.

THE GEORGE WASHINGTON UNIVERSITY BULLETIN is published four times a year, under the editorial supervision of the Board of University Publications, appointed by the President's Council. It is the purpose of the Council to make the BULLETIN an organ of the educational and scientific activities of the University. The University Catalogue constitutes one number. Others are devoted to information of special interest to the Alumni and patrons of the University. Scientific numbers are published from time to time containing contributions from instructors and graduates and information regarding books, monographs, and papers published by them under other auspices.

The present Scientific Number is devoted especially to the Department of Medicine, and a number of papers are presented from members of the Faculty and Alumni, most of which were read before the University Medical Society. It also contains notes bearing on investigations and researches being made by instructors in this department, announcements of recent appointments, and miscellaneous items of University interest. The Board desires to be kept informed as to the academic record, publications and professional appointments of instructors and graduates in all departments of the University. Communications may be addressed to the Chairman.

The thanks of the Board are gratefully extended to the Advisory Committee of the Department of Medicine, consisting of Dean Phillips and Professors Franz, Nichols, Richardson, and Yarrow, for their co-operation in the preparation of this number.

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The George Washington University
BULLETIN

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PSYCHOLOGY AND THE MEDICAL SCHOOL.

By SHEPHERD IVORY FRANZ, Ph.D.,

Professor of Physiology and Experimental Psychology; Psychologist, Government Hospital for the Insane.

No one can seriously consider the history of medicine and particularly the history of medical education during the past century and fail to realize the wonderful advances that have been made in the preparation of young men and women to care for the health of the community. Not many years ago a few courses in a medical college, with some time spent as an apprentice to a practising physician sufficed to produce a doctor of medicine. At this time and for many years the work of the medical school was subsidiary to the practical observation of patients and the compounding of drugs. The medical school furnished the opportunity of dissection and a few lectures on general chemistry and materia medica. The school existed largely because it was a convenient place for the acquisition of knowledge of the structure of the body by laboratory (dissection) methods and it is not strange that the traditions of the schools at the time and for many years should have been anatomical.

With the advent of new subjects, but also because of the insistent, although perhaps unexpressed, demand of the public for better trained physicians, the medical course has been gradually extended and the apprentice part of medical education has given place to hospital experience, which is much broader than the experience to be gained from following the cases of one man. The new subjects that were introduced have brought about a change in the character of instruction. Although it was first contended that it was necessary to have laboratory instruction only in anatomy, the division of students into small sections and the requirement that each student should have immediate experience with each subject in now almost universally acknowledged. The change in courses and methods is most striking in the subjects that may be called functional. The anatomical tradition still remains predominant in a few schools, and in these the appearance of the body in gross and under the miscroscope is believed to be the most important part of the education of a physician.

Were we to inquire, even in the schools that retain the anatomical standpoint, what the duties and the functions of a physician or surgeon are we should undoubtedly find that, in spite of the tradition, the answers would indicate a change from the exclusive structural to a juster appreciation of the functional standpoint. The function of the physician and the surgeon is the same. He who has charge of the health of a part of the community has one aim whether he uses the methods usually called surgery or those called internal medicine. This aim is a physiological one, one dealing with the functions of the body almost exclusively. This aim is to get the sick well and to prevent the well becoming ill. The aim is to get the body that does not properly function to perform its functions better; to prevent the improper functioning of bodies that are now well. Whether a leg is to be amputated or a headache treated the aim, consciously or unconsciously realized, is to make the body perform its functions normally or more normally than when the treatment was begun.

As indicated above, there are several methods used to restore or to preserve health. In the schools the methods of surgery and administration of drugs have been taught exclusively. These methods have been emphasized because of the materialistic view of life and because the extra-bodily causes of disease are more easily understood. The intra-bodily causes of disease have been disregarded, and for this reason charlatans of all kinds have been able to flourish and to grow rich. Mountebanks and fakirs of pleasing address and with a persuasive tongue have been able to gather their greatest gains from, and often in return to cure the ills of, patients who have no known cause for their bodily disorders, and who have been too summarily turned off by regular practitioners of medicine.

This is not the place to discuss in full the causes of disease or the different methods that have been found useful for the relief of ills. At the present time I desire solely to emphasize the importance of keeping in mind the fact that there are some ills not yet correlated with bodily changes, that the causes of the conditions are often intrabodily, and that neither medication nor surgical operations are indicated. These pathological conditions are now known to be matters for careful psychological study and treatment, not for symptomatic prescription.

Psychology has been defined as the science of mind. It is the careful study of everything mental, how the mind works, how it is affected by external agents, how it can be made to work in certain directions, how, in fine, it can be made to affect the body (the extra-mental part of the individual) for well or ill. It includes the study of the mind or mental states in all kinds of people and animals, and if mental states are to be found in plants and rocks it will include the study of the mental side of the flower or the stone. The field of psychology is as broad as mentality. It embraces the whole domain of mental phenomena, but for our purpose here we need consider only a small part of the field, that in relation to human activities.

Each one appreciates that he has within himself or that he has as part of himself something that is called "mind." The thing that is called mind differs from most of the individual in that it is something that cannot be seen, felt or heard or appreciated by any other person through the medium of the senses. To oneself the mind, in other words, is immediately given, to others it cannot be sensed but can be only surmised and only mediately appreciated. Mental states are individual and are only directly known to and knowable by the individual having them. By a series of deductions we may come to the conclusion that another individual has mental states and from a long series of experiences we have come to judge fairly accurately from his words and actions what sort of mental processes a certain man has at a given time. From another series of observations and deductions it has become apparent that the mind is somehow dependent on the part of the body we call the nervous system.

Although it is generally admitted that the nervous system is the part of the body most intimately connected with mental processes, it is also understood that the action of a nerve cell is different from the sensation or the idea. Sensations and ideas are correlated with or coexistent with the changes in the nervous system, but the physical and the chemical changes in the cerebrum, for example, are different to the mental states. The physical phenomena differ from the mental in that the former may be measured in many ways, the latter little if at all. The physical differs from the mental also in that we know the former to be different kinds of energy more or less well known, whereas the latter, as Ostwald avers, may be some form of energy, the character and relationship of which are unknown and possibly unknowable.

The fact that psychology has to deal with the mental side of the life of an individual gives at once an indication of the place the science should hold in the medical curriculum. We depend upon the mental acuity and integrity of a patient for the information that will enable us to make proper diagnosis, and at the same time to understand the course of the disease. In many cases where the mental processes are abnormal this condition in itself is the means for diagnosis and the only means. In some diseases it may be possible to diagnose the condition from physical signs or without any information from the patient or from friends or relations. This is, however, possible in only a few of the diseases and even in these cases the external signs of internal conditions of a mental order, such as sensations of pain or feelings of discomfort, are most valuable in limiting the diagnosis to a few possible conditions.

Not only do we depend upon the mental condition, the sensations and the feelings, of the patient for information of diagnostic value, but the mental state or the mental attitude of the patient is of some help in prognosis. To mention only one example we may cite the condition of interest on the part of the patient. While not mentioned in many text books of medicine as of importance for diagnostic or prognostic purposes the signs of a patient's interest in and appreciation of the things that go on give many physicians an idea of the condition of the patient not to be obtained from percussion or auscultation or the thermometer. In the above I have purposely used the words many physicians. This is because there are some physicians who do not carefully or even casually observe the mental symptoms and concomitants of diseases. Most of these are recently graduated from the medical schools, who following accurately the instruction they have received look for all the physical signs but who, untrained in the observation and interpretation of mental signs, do not take into account the diagnostic and prognostic indications of physiognomy and general behavior.

In some diseases the mental changes and differences in behavior, which are indications of mental activities, are the only indication of abnormal functioning. In many of these cases, which have been grouped under the general term "insane," there are to be found no marked changes in the functions of the vital organs. The heart and the circulatory system, the intestinal tract and digestion, secretions and the secretory organs are normal. Even the nervous system, so far as it can be studied by the usual clinical means, is normal. Only the activity and the feelings of the individual may be changed. The patient may feel depressed and remain quiet. He may require many times the normal amount of stimulation to bring about normal activity, although he can and does feel as acutely as another individual we choose to call normal. Or, on the other hand, he may appear to be hyperexcitable, with an apparent increase in his motor activity, and he may be unduly sanguine, even joyful, about matters that would depress an ordinary normal man. In these individuals the physical changes accompanying the disease are so insignificant and so inconstant that they can not be considered to have more than a passing place in the condition. Preeminently, the disease is the change in the mental condition of the individual. It is a change in the functions that are termed mind.

For many years it was supposed that, owing to the brilliant results of the investigation of non-mental diseases by means of the microscope, the only means of determining the cause of the mental change in the insane would be by studying stained sections of nerve cells and nerve filaments. For twenty-five years this work has been occupying the attention of the student of mental diseases and with a very small return in so far as the mental aspect of the diseases are concerned. In some types of mental disease nothing has been discovered in the cerebrum or other parts of the nervous system that can not be found in perfectly normal people. The anatomical study to correlate mental changes with supposed brain differences has been unproductive. This is so even in such conditions of the nervous system as paresis, where the cerebral and other changes are most marked. The structural changes in paresis have been followed to such a degree that we are able to understand why there are found in addition to the mental picture the functional neurological differences in the reflexes and voluntary actions but no one has yet explained why in this type of disease we so often find the feeling of well-being accompanying a condition of the body far from well. I shall not predict that in these cases we shall be able to explain the condition from purely psychological study, but it appears probable that more light will be shed on the problem by such investigations.

In all types of mental disease the functional, or, more restricted, the psychological, study has been taken up with energy during the past few years, and we are just beginning to understand the problems from the new standpoint. Mania and melancholia, the types in olden days of two opposite diseases, are now known to be one. Instead of having an increased mental activity the maniacal individual has been found to be slower than normal, and in this respect to approach the type of the melancholic who is evidently slow. He has no increase in mental rapidity or in mental power, but is less able mentally just as is his fellow patient, the melancholic. Hysteria is purely a mental disease. Dementia precox is a mental change in an individual which has not yet been found to have any changes in the cerebral cells. Even with our most advanced methods of brain research with microscope and microtome we are as far from understanding many of the diseases of the mind as we were twenty or more years ago, and only by careful mental examinations have we been able to unravel the tangle to some extent.

So far we have considered the place that psychology has in the observation of cases for diagnosis. It has also a prominent position, which it has not hitherto been granted, in the treatment of many disorders. The subject of the influence of mind over body is a popular one and one that has received a large amount of attention, but not from the medical profession. We all have had the experience or have seen others having the experience of relief from pain during a period of time filled with matters of interest and importance. When the attention had passed from the sensation of pain to other sensations and ideas, the pain for the time being ceased to exist, to return when interest in the other things ceased. The introduction of a new element into the field of consciousness has, we may say, inhibited the old and so long as the new is in focus the old is out of focus. The presence of certain stimuli will prevent the appreciation of other stimuli given at the same time. In an extended form this is one of the most powerful of the psychic methods of treatment, the substitution of one mental state for another. This substitution may take the forms of amusement, instruction, travel, and many other occupations.

In some cases it is possible to produce a cure by substituting punishments instead of pleasant occupations. The use of the cautery on the spine or the application of an electric brush has been found to be of great assistance in the cure of conditions obstinate to all kinds of medicinal agents. In such methods suggestion plays a large part, and in some of the older popular methods it is the whole. Examples of the latter are the use of a placebo and bread pills. With all our knowledge of the finer anatomy of diseased tissue the placebo still remains one of the most powerful medicines in the hands of the physician who appreciates how and when to use it. And there must be added to the methods hinted at above that of suggestion in the hypnotic state. This is the mental method par excellence, and is to be used only on special occasions and after others have failed. By it almost anything may be done, from relieving some of the distress of asthma to changing the habits of wayward boys.

A careful perusal of the leading text-books of physiology will show that already in the medical schools psychology has a place. Disguised under the name of physiology, sensations and perceptions take the place of unknown physiological processes in discussions of the brain and the special senses. The formation of images on the retina is a part of physiological optics. The phenomena of contrast and color, as well as of the estimation of space and size are psychological. The sensations of tone are strictly mental phenomena, the vibration of the basilar membrane, if this is what happens in the ear, is physiological. Pain, touch, heat, and cold are sensations from we know not what in the skin. Smell and taste sensations are received from terminal organs of the activity of which we are ignorant. So it is in the cerebrum. We talk glibly of sensation and perception centers, of areas for associational processes, but while the psychological analysis has been carried to a correspondingly high degree of perfection we are almost as ignorant of the physiological cerebral processes as we were fifty or a hundred years ago.

It is to be seen, therefore, that psychology or psychological methods are of value for diagnosis, not only of mental diseases, but of the so-called bodily diseases. They are important also for determining the prognosis, and the psychological methods have, or rather should have, an equal consideration with the other methods of medical procedure, the administration of drugs and the knife. Does this mean that there should be introduced into the already crowded curriculum of the medical school an additional course or courses? The answer to the question depends upon the relative emphasis that is already laid on the mental side of disease in the courses given in the schools. In some schools, the only reference to psychological matters is to be found in the courses of the physiological department. In a few, judging by the recent utterances of members of the faculties, some attention is now being paid to this hitherto neglected field. The answer also depends upon the character of the students. If the students on entrance have had some training in mental science, the practical application of the facts learned in college courses may be made easily, but it must not be forgotten that in most institutions courses in psychology are composed of material that has little or no known value in medical science and practice. There would be many advantages in having special courses in psychology for medical students, just as there are advantages in having special courses in physics or mathematics for students of engineering or architecture, or just as there are special reasons for having courses in Biblical and Patristic Greek for students of theology. The facts and principles of any given subject are the same regardless of what application may be made of the facts and principles, but in professional study and use certain facts and principles are more and oftener applicable than others. The facts and principles applicable in any work should hold a prominent place in courses designed for the preparation of the men who are to make the application, and for this reason special courses in psychology for medical students are desirable, perhaps necessary.

A course similar to the one outlined by Professor E. C. Sanford, of Clark University, with modifications to suit the needs of medical men, is the sort of a course in psychology from which not only every student but every practitioner of medicine would profit.[*]

Not the psychology of the anatomical elements of mind, sensations and their qualities, perceptions and perception complexes, attention and will, but the psychology of the mind as a whole and especially of the mind in its relation to every day life must be the subject of a course for medical men. Such a course should consist of lectures delivered by some one of large experience, who would take up among other things: the psychology of belief, of hypochondriasis, of illusions, hallucinations and delusions; the psychology of the crowd with its application to epidemics and especially nervous disorders; suggestion in its various forms and application; the expression and the interpretation of the feelings and emotions. In this series of lectures the dissection of the mind and the labeling of its parts have no place; terminology and definition are to the student of little import as compared with the grasp of the psychical point of view. Systematic psychological training may well be added, but the first requisite is that the student shall thoroughly understand the part that mind plays in the world as shown by the foibles and the disordered beliefs of the present and the past centuries. For careful appreciation and thorough understanding of the mental state of an individual more systematic knowledge is necessary, but only a few need have the special training. All should have the general training and the opportunity of acquiring the psychological attitude.

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[*] Professor Sanford's paper on this is well worth reading and digesting. Although he discusses the requirements of the subject for students in any branch of knowledge, his remarks are applicable to the medical school more than to any other professional college. E. C. Sanford, A sketch of a beginner's course in psychology, *Pedagogical Seminary*, vol. XIII, 118-124, March, 1906.

It has been said that all of us are psychologists in a very practical way, that we are psychologists in as much as we interpret the actions of our fellows in terms of our own mental make up, and that in so far as we interpret the actions rightly are we not only good psychologists, but also successful in our dealings with our comrades and dependents. It is upon the degree of the ability to interpret the actions of others properly that success depends. In none of the professions is it so necessary for the success of the practitioner to have accurate judgments made, in none do the comfort and life of the patient depend on this so much as in the profession of medicine. The daily attendance on patients, the meeting and consultations with relatives and friends require that the physician be an excellent judge of human nature, be in other words a successful and observing psychologist. Observation, diagnosis, assiduous attention, and the sending of bills have been said to be the main qualifications for a successful practitioner of medicine. All four require considerable insight into the mental characteristics of the patient and the family, all require the application of psychological principles to the matter in hand. One may well be a successful medical man without being able to define accurately what is meant by apperception, or belief, or consciousness, or the self. He has had experience that enables him to know a patient believes or apprehends certain things, but the understanding of the belief or of the apperception is to be gained by only long and weary personal investigation if the thoughts and experiences of others have not been drawn upon and made the basis for personal observation and deduction.

It is an old fallacy to say that each of us has a mind and that for this reason each one is able to observe and to record mental facts of value. It is just as unquestionable that each of us has a body and that we are, thereby, able to observe and to add to the sum of human knowledge about the body. Just in the way that we have some knowledge of the body, of the presence of lungs, heart, brain and bones, have we knowledge of psychical things, of memory, attention, sensation. Without special training or long experience we are able to judge and value mental conditions about as well as we are able to construct anew the sciences of anatomy or physiology without the special training to be received in the laboratories devoted to these sciences and without the knowledge of the development of these subjects during the past. For the proper preparation of men to care for the health of the individual or the community some psychological training is necessary. He will be the most successful who has knowledge not only of the body and the action of drugs, but who also has knowledge of the action of mind.

The medical schools and the medical faculties must realize that they can not afford to permit students to pass through their medical preparation without at least a fundamental knowledge of the mental side of life. It is necessary, nay demanded of them, that the graduate be prepared to appreciate the power of the mind for health or illness, that he be given at least a view of mental conditions, mental signs, and mental therapeutics, and that he be prepared to treat the cases now turned over for exploitation, and often cure, by charlatans. It was one of our professional humorists, I believe, who wrote that if the Christian Scientists had more science and the doctors more Christianity, and if a patient had a good nurse his chances of living would be greatly increased. It is not Christianity the doctor needs, his daily life and good works show that he has the Christian spirit, but he does need the thing on which the Christian Scientist depends, a knowledge of or insight into mental states, in other words, psychology.

OBSERVATIONS WITH RESPECT TO TYPHOID FEVER IN THE DISTRICT OF COLUMBIA.

By WILLIAM C. WOODWARD, M.D., LL.M.,

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In one of the volumes of the report of the federal census of 1890, published in 1893, appeared the statement that during the six years ended May 31, 1890, the death rate from typhoid fever in the District of Columbia was 75.55 per 100,000, while the death rate from the same disease in a neighboring city, Baltimore, was but 40.17. A volume of the same report, published during the following year, showed that the death rate from the same disease in New York City was but 24.27, and the death rate in Brooklyn only 23.13. These figures, however, hidden away in the recesses of an official report appear to have attracted no attention, notwithstanding the fact that Dr. George M. Kober, in a paper read in Berlin, in 1891, before the International Medical Congress, had called attention to an outbreak of typhoid fever in the District of Columbia, beginning in December, 1889, and extending well into the spring of 1890, coincident with an outbreak of the same disease in Cumberland, Maryland, on the Potomac River, 174 miles above the intake of the Washington Aqueduct.

It was not until the evening of February 5, 1894, that Washington found itself stigmatized as a typhoid fever city, and the blame for such stigma placed upon the public water supply. On the evening mentioned, Dr. Charles Smart, of the Medical Corps of the United States Army, in an address before the Sanitary League, a popular sanitary organization that had sprung up as a result of the cholera scare which prevailed about that time, called attention to the excessive number of deaths from typhoid fever reported from year to year in the District of Columbia, and attributed them to the pollution of the Potomac River water, which, unfiltered, was being consumed for drinking purposes by the people of the District. The death rate from typhoid fever during the five preceding calendar years had varied from 80.4 to 110.5. These figures, however, alarming as they were, had attracted so little attention that Dr. G. L. Magruder, one of the leading physicians of the community, promptly took issue in the meeting with Dr. Smart's statement. On the following evening Dr. Magruder called the attention of the Medical Society of the District to the statements made by Dr. Smart, characterized these statements as purely misleading, and said that the experience of the practitioners of the city did not warrant any such conclusions. He moved that a committee of three be appointed to investigate the subject, and as a result Drs. G. L.

Magruder, W. W. Johnston, and C. M. Hammett, were appointed to constitute such a committee. Dr. Hammett was then the Health Officer of the District of Columbia.

The report of the committee just named was submitted to the Medical Society on June 6, 1894, and sustained all that had been said by Dr. Smart. The report called attention, among other things, to the fact that there were in use in the District 201 public wells, the number having been reduced from 289 since the year 1888, and to the existence within the city of 8,959 box privies and in the county of 5,133, a total of 14,092.* The report concluded with the following recommendations:

"The committee would urge upon the Medical Society the importance of taking the initiative in the effort to control the spread of this destructive but preventable disease by urging upon our municipal government, and upon Congress, the prompt adoption of measures to remove the causes to which this report has drawn attention.

"The measures to be recommended are:

"1. The immediate abandonment of all wells within the city limits, exception only to be made in case of the absence of the Potomac supply, and where the wells, after repeated chemical and bacteriological examinations, have been found to be free from all possible sources of danger. But even these to be abandoned as rapidly as possible.

"2. Purification of the sewerage system already existing, by replacing as rapidly as possible all damaged or defective drains.

"3. The introduction of new sewers in advance of other improvements in parts of the city not now supplied with drainage, and the extension of the system as far outside of the city limits as the rapidly growing population demands, so as to prevent soil contamination.

"4. The adoption of some system by which the lower sections of the city can be more completely drained and the risks arising from the backing up of tide water and sewage prevented.

"5. The final and safe disposal of the sewage.

"6. To make all existing privies, vaults, or other receptacles of human excreta water tight, and by rigid inspection and penalties to prevent the danger from leakage and overflow.

"7. The early completion of the plans recommended by Col. Elliot, in charge of the Washington Aqueduct, and now in course of execution, which have in view the sedimentation of the Potomac water, and ultimately the completion of works for filtration, the only proper method of purification.

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*These figures may be regarded as a fair index of existing conditions, although their accuracy is, I believe, open to question. So with respect to the number of wells closed from year to year as shown in the appended table; the exact number closed each year has been difficult to ascertain, but there has been a general movement toward closing shallow wells until in May, 1907, the number existing was sixty-two, and these excepting nine were closed by Commissioners' order of May 21, 1907. The figures in the appended table showing the number of box privies abandoned from year to year are accurate, but it is difficult to tell the number now in existence. It is believed, however, that the number would not exceed 4,000 in the entire District.

"8. The suppression of all privies and the enforcing of the law to make sewer connections.

"9. Careful inspection of all dairies in the District from which our milk supply is drawn, and the enactment of a law by which no milk shall be sold in the District without a permit from the Health Office. The inspection should cover an examination at the dairies of all possible sources of infection, including the water supply.

"10. The urging upon the members of the profession of a careful collation of all facts bearing upon the mode of infection in each case, and the advantage of reporting such facts to the Society, and the propagation of the doctrine that immediate disinfection of the stools is the first duty of the physician as guardian of the health of the community."

Entirely without reference to any supposed effect on the prevalence of typhoid fever, action had been taken even before the report of the above named committee was made, to carry out some of the projects which the committee recommended. Under the provisions of the act of Congress of March 2, 1889, making appropriations for the expenses of the government of the District of Columbia, the President of the United States had appointed a commission to examine and report upon the system of sewerage existing in the District of Columbia, and to make such suggestions and recommendations for the modification and extension of the same as they deemed necessary or desirable, and the report of the committee had been duly submitted to Congress and printed. The use of the Dalecarlia receiving reservoir, a storage basin with a capacity of about 150,000,000 gallons, had been discontinued in 1888 because of the turbidity and impurities introduced by the Little Falls branch, from which a part of its supply was received, with the result, however, of diminishing the period of sedimentation of the general water supply of the city. The appropriation act of March 3, 1893, had provided for the improvement of this reservoir so that it might be restored to use. A bill providing for the better regulation of the milk supply of the District had already been introduced into Congress and was then under consideration by the Medical Society, whose advice with respect thereto the Commissioners of the District of Columbia had requested.

The Medical Society, however, with commendable promptness appointed a committee to submit to the proper committee or committees of Congress the report that had been made concerning typhoid fever, and on June 14 the report was submitted to the Committee on the District of Columbia of the House of Representatives and published as an official document. During the same year, the officer in charge of the Washington Aqueduct, Col. George H. Elliot, Corps of Engineers, U.S.A., submitted in his annual report a lengthy statement relative to the filtration of the Potomac River water, in which he concluded as follows:

"It is expected that when the works of improvement required for restoring to use the Dalecarlia receiving reservoir shall have been completed, at the end of this fiscal year, the time during which the water may be "settled" before it is sent to the city from the distributing reservoir will be so much increased (it will be doubled) that the condition of the water as to color after high-water and freshets in the Potomac and its tributaries will be much improved, and that when the new reservoir near Howard University,* which is to contain 300,000,000 gallons of water, shall have been finished and brought into use, there will be but little to be desired in respect of the quality of our water supply."

Coincident with the inauguration of its work toward the improvement of the water supply of the city, the Medical Society had taken vigorous action toward the bettering of the milk supply. At the meeting held on June 13, 1894, the Society approved the draft of a bill to regulate the production and sale of milk in the District of Columbia, and submitted it to the Commissioners as a substitute for the measure that the Commissioners had referred to the Society. The bill, substantially as drafted by the Medical Society, became a law on March 2, 1895. No sufficient provision was made, however, for its enforcement, and, therefore, really efficient work under it did not begin until several years later. On July 26, of the same year,1895, the Dalecarlia reservoir was put into use, thus increasing very materially the sedimentation of the Potomac River water before its distribution. Typhoid fever was, however, so prevalent during the summer of this year that, at the request of the Health Officer, Dr. Kober assumed the duties of special medical inspector to inquire into its causes. His report was submitted to the Health Officer under date of November 27, 1895, and concluded with the following recommendations:

"First. The immediate closing of every well in the District wherever a better water supply can be obtained.

"Second. The early completion and extension of all necessary sewers within the city limits, and the enforcement of the law to make sewer connections.

"Third. The abandonment of all box privies within the city limits and the enactment of more stringent laws for the prevention of soil pollution, together with a rigid, frequent, and systematic inspection of all box privies in the suburbs.

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*This reservoir has since been named the Washington City reservoir.

" Fourth. The improvement of the Potomac water by means of filtering basins, and the extension of the water supply to the suburbs at the earliest moment practicable.

" Fifth. Such measures as may be necessary to improve the sanitary condition in the lower part of the city, along the Potomac and the Eastern Branch, looking to the reclamation of stagnant and polluted marshes, and the prompt disposal of the sewage.

" Sixth. The enactment of a law requiring notification to the Health Officer of all cases of typhoid fever and other infectious diseases in the District of Columbia, together with a rigid enforcement of the building regulations requiring the cementing of cellars and basements, to prevent contamination of the air from polluted subsoils, and the systematic inspection of dairies inaugurated by you.

" In the meantime, as a preventive measure I earnestly recommend to the public the thorough disinfection of the excreta from all typhoid fever patients and greater care on the part of those connected with the sick, together with boiling the water and milk supply."

The recommendations made by Dr. Kober were promptly approved by the Health Officer and forwarded to the Commissioners with the recommendation that the Health Department be provided with means for conducting at all times inquiries similar to the one which Dr. Kober had made, but relating not alone to typhoid fever but also to all preventable diseases. The Health Officer recommended further that in addition to the construction of filter beds to remove impurities which could not be prevented from entering the river, steps should be taken to reduce to a minimum the amount of such impurities, and that, to that end, the Potomac basin be surveyed with special reference to the then present and prospective sources of contamination of the public water supply, and with a view to the adoption of whatever measures might be possible to remove such sources and to prevent their recurrence. The death rate from typhoid fever, which, during 1894, had been 85.8, dropped in 1895 to 79.3.

On May 19, 1896, an efficient law was enacted providing for the enforced drainage of lots, including the abolition of box privies. As was the case with respect to the milk law, so with respect to the compulsory drainage act, no special provision was made for its enforcement. During this year, however, 800 box privies were abolished. Twenty-six public wells were closed and the death rate from typhoid fever fell from 79.3 to 53.7. During the following year, 1897, 973 privies were abolished, and two public wells were closed; and the death rate during this period fell to 45.7. It must not be presumed, however, that the diminution in the death rate was due to the abolition of privies or the closing of wells. The possible effect of the restoration to use of the improved Dalecarlia reservoir on July 28, 1895, must also be borne in mind. And then as a factor calculated to offset any conclusions with respect to the cause of the diminution in the typhoid fever death rate are the facts that during the following year, 1898, the death rate rose to 67.5, that in 1899 it was 69.3, and in 1900, 74.5; and this notwithstanding the fact that during the years 1898, 1899, and 1900, 1429 box privies had been abolished and 49 wells closed, and, more efficient inspection having been provided for, 1402 inspections of dairy farms had been made.

On March 21, 1898, appeared a report issued by the Marine Hospital Service, showing the results of certain investigations which that organization had been making since the previous summer with reference to the pollution of the Potomac River. This report, prepared by Dr. J. J. Kinyoun, then Passed Assistant Surgeon, Marine Hospital Service, after presenting the facts that had been found, said: "The conclusion to be drawn from the above statements is that the Potomac is polluted with sewage to such an extent that it is a constant menace to the health of the inhabitants of the District of Columbia. This is not a new statement, but is made only to emphasize what is already well known." On June 30th, of the same year, largely as the result of the persistent agitation of the subject by the Medical Society, an appropriation was made for investigating the feasibility and propriety of filtering the public water supply of the District of Columbia. The result of these investigations was submitted by the officer in charge of the Washington Aqueduct, then Lieut.-Col. A. M. Miller, on March 28, 1900. Col. Miller reported that "the bacteriological results obtained showed that the Potomac water as delivered from the mains is, in times of turbidity and low temperature, dangerous to health by reason of the quantity of bacteria present," and concluded that "if Washington is to be supplied at all times with an unobjectionable water, the only recourse is the adoption of a system of filtration." Col. Miller recommended the adoption of mechanical filtration, to which recommendation the Medical Society and the community generally took exception and, as a result, the Senate Committee on the District of Columbia investigated the subject, taking the testimony of certain experts with respect to the relative merits of the two systems, and procuring a report from certain distinguished engineers concerning the matter. The report of the Senate Committee was submitted to the Senate on February 19, 1901, and, on March 1, of that year, the first appropriation was made for the construction of filters for the purification of the water supply of the District of Columbia.

On January 8, 1902, the Washington City reservoir was put into service. This was a new reservoir added to the water-supply system of the District, and had a capacity of three hundred million gallons. It added, therefore, materially to the period of sedimentation of the public water supply, at least in certain parts of the city. In 1901 and 1902, 560 privies had been abolished, five public wells closed, and 3,222 inspections of dairy farms made. On January 8, the Washington City reservoir had been put into service, and on February 4, the law requiring the reports of all cases of typhoid fever had been enacted. Yet the death rate, which had fallen in 1901 to 56.4, rose in 1902 to 74.0.

The following year, however, it fell to 45.0 and during the next year, 1904, it fell to 43.8. On August 18, 1905, the first of the public filters was put into use, and others were put into service as rapidly as completed, so that by October 5, the entire water supply of the city was filtered. It was too late in the year to expect that the filtration of the public water supply would bring about a material improvement in the death rate for the entire twelve-month period, yet the community was somewhat disappointed when no improvement occurred even during November and December. But with the filtration of the entire water supply of the city, with the abolition during 1903-04-05 of 968 more box privies, the closing of seven public wells, and 11,124 inspections of dairy farms, it was confidently believed that the year 1906 would show some improvement. What then was the disappointment of the community when month by month passed without any diminution in the number of cases reported or in the number of deaths? During the year 1906, 197 more privies were abolished, eleven more wells were closed and 3,526 inspections of dairy farms were made. Regulations were promulgated on April 4, 1906, for the better regulation of the keeping and disposal of stable manure with a view to the diminution of the number of flies and the lessening of the likelihood of infection through that agency, and on April 24, a regulation was promulgated requiring candy, and similar foods, sold on the streets and other similarly exposed places, to be kept covered so as to prevent them from becoming contaminated by dust and flies. Yet when the year had rolled around and an account of typhoid fever mortality was taken, it was found that the death rate, which in 1905 had been 43.9, in 1906 was 49.6.

The close of the year 1906 was marked by the discussion of the water supply of the District, on November 7, by the American Society of Civil Engineers, and by the publication on November 8 of a report on the subject by a special writer for the Engineering News, Mr. T. E. Horton. On February 16, of the current year, the Public Health and Marine Hospital Service published an elaborate report, concerning the prevalence of typhoid fever in the District of Columbia, and during the same period the Geological Survey has published an account of the Potomac River Basin, which goes exhaustively into the subject of stream pollution. It can not be said, however, that anything new with respect to the cause of the undue prevalence of typhoid fever has been developed.

From what has been said it will be seen that the Health Department of the District of Columbia has had an unusual opportunity for investigating the causes of typhoid fever during a considerable number of years past. Not only has a large number of cases of this disease come under the observation of the Department and been investigated by its own representatives, but there have been available for study the results of several more or less independent investigations. It may not be inappropriate, therefore, in concluding this paper, to state in a summary manner some of the results and conclusions.

1. *Variations in Death Rates.*—The variations in the typhoid fever death rate from year to year from unknown causes are so great as to render it unwise to found any opinion as to permanent improvement upon figures for a single year, but a single rise in the death rate may be sufficient to prove the continuous existence of danger, potential at least. (See Table I.)

2. *Distribution.*—No evidence has been found to show that typhoid fever has been persistently more prevalent in any one part of the District than elsewhere.

3. *Race.*—Whether typhoid fever is or is not more prevalent among the colored population has not been determined. The colored case rate is, as compared with the white case rate, relatively low, while the colored death rate and percentage of fatalities to cases are relatively high. This may be due either to the fact that mild cases among the colored race escape observation, or to the fact that when the disease occurs death is more apt to follow, or to both of these causes. (See Table II.)

4. *Milk Supply.*—A connection between the distribution of milk from certain dairy farms and the occurrence of typhoid fever has been found in 2.6 per cent of 4,135 cases of typhoid fever apparently indigenous to the District, investigated between 1902 and 1906, inclusive. No evidence has been found, however, to show that the general prevalence of typhoid fever in the District has been due to the milk supply, or that the number of cases in the District fairly chargeable to the milk supply exceeds the number chargeable to the same source in other communities. (See Table III.)

5. *Oysters and Vegetables.*—No evidence has ever been found upon which any case of typhoid fever could fairly be attributed to the eating in the District of Columbia, of infected oysters, clams, or uncooked vegetables, and no facts are at hand to show that the supply of these articles in the District of Columbia is materially different from the supply in other places where typhoid fever is not so prevalent.

6. *Privies.*—No demonstrable relation has been discovered between the location of box privies and the occurrence of typhoid fever. Whether the very considerable diminution in the number of box privies

within the sewered portions of the District has or has not anything to do with the diminution in the prevalence of typhoid fever that has occurred in recent years, can not be demonstrated. (See Table I.)

7. *Water Supply. Public Wells.*—In no instance has it been possible to trace any case of typhoid fever to a public well, nor has it been possible to discover any grouping of cases about any public well. Whether the closing of a large number of public wells has or has not contributed toward the diminution in the prevalence of typhoid fever in the District of Columbia, which has occurred since 1894, can not be demonstrated. In two cases outbreaks were fairly chargeable to the infection of private wells. (See Table I.)

Public Water Supply.—That prior to the filtration of the public water supply, typhoid fever could be distributed throughout the District of Columbia by the contamination of the Potomac River at a point even so remote from the intake of our city water supply as 174 miles, is believed to have been demonstrated by the unusual prevalence of typhoid fever in 1889 and 1890, coincident with an outbreak of typhoid fever at Cumberland, Maryland, and the unusual prevalence of the disease in September, 1904, immediately subsequent to an outbreak at Mount Savage, Maryland. The fact, however, that the water supply of the District has been, according to accepted standards, thoroughly well filtered since October 5, 1905, without any subsequent diminution in the prevalence of typhoid fever until June, 1907, shows either that the continuous undue prevalence of typhoid fever in the District of Columbia prior to filtration was not due to the public water supply, or that accepted ideas with respect to the operation of a slow sand filter in its specific relation to the typhoid bacillus are wrong, or that prevailing opinion as to the period that ordinarily elapses between the ingestion of the typhoid bacillus and the onset of the disease is erroneous.

The number of bacteria per cubic centimeter in the public water supply since filtration seems to bear no relation to the prevalence of typhoid fever, except that the number is, in a general way, larger during those periods when the disease is least prevalent than it is at other times. A similar relation existed prior to filtration. The exact relation existing between the frequency of the finding of colon bacilli and the occurrence of typhoid fever can not be made out definitely from data at present in hand. The unusually large number of cases reported during January of the current year considered in connection with the unusual frequency of the finding of colon bacilli in the water supply in November and December of the past year, and January of the current year, suggests a possible relation between those two factors. So also does the unusual freedom of the District from typhoid fever during the past summer, when examinations for colon bacilli were altogether negative, as compared with the prevalence of the disease during the summer of 1906 when colon bacilli were more frequently present. In undertaking to determine the relation between the finding of colon bacilli in the water supply and the occurrence of typhoid fever comparisons must be made only of such data as relate to corresponding seasonal periods. The fact that the amount of raw water ingested during the summer months is greater than during the cold season, renders the chance of infection through water, other things being equal, greater during hot weather. (See Tables IV & V.)

8. *Bacillus Carriers.*—Available evidence is not such as to justify the opinion that so-called bacillus carriers play an important role in the dissemination of the disease. Of 4,135 cases originating in the District of Columbia between 1902 and 1906, inclusive, only 7.3 per cent were charged to direct contact with known cases. Moreover, many of our typhoid fever patients must have been bacillus carriers for longer or shorter periods after they had recovered clinically and resumed their places in their respective households. Yet the occurrence of a second case of typhoid fever in the same house in which the first case occurred, but after the lapse of four or more weeks from the recovery of the first case, is of extreme rarity.

Although we are not able to point out the cause, yet there has been a great diminution in the prevalence of typhoid fever in the District of Columbia since, in 1894, agitation was begun for the sanitary improvement of the District of Columbia. Much still remains, however, to be done. To class such typhoid fever as now exists as "residual" typhoid or "prosodemic" typhoid avails us nothing. Nor is anything gained by attributing the undue prevalence of the disease to the fact that Washington is a "southern" city. Either typhoid fever is a preventable disease or it is not. If it is, let us prevent it. If it is not, let us say so and turn our attention to something where or efforts may bring some reward. Personally, I believe that all diseases are preventable even though we may not yet have found out how to prevent them, or, if we have found out, although we can not or will not pay the price of prevention.

The problem at hand is not one affecting Washington alone, or one affecting any other one of two communities. It is one affecting the entire country, which during the census year 1900 lost 35.379 of its people from this preventable cause. Let the United States then devote some of its millions to the study of the disease and to the dissemination of information with respect to it, so that the day of its eradication may be hastened. Let the government attack the problem of preventing diseases of human beings with the same earnestness and energy with which it has attacked the problem of preventing or curing diseases of the lower animals and of plants, in the same direct manner, and in the same liberal spirit, and in the end all will be well.

TYPHOID FEVER IN THE DISTRICT OF COLUMBIA.

Table I.— Showing what has been done to prevent typhoid fever, and the results. (Cases and deaths from "typho-malarial" fever are included.)

Year	Inspection of dairy farms.	Public wells closed.	Privies abolished.	Typhoid Fever.				Remarks.
				Cases reported	Deaths.	Death rate per 100,000.	General death rate per 1,000.	
1889	......	......	172	.....	213	95.6	23.15	Mar. 2. Commission on sewerage authorized.
1890	......	......	119	.....	257	110.5	23.81	
1891	......	......	105	.....	195	80.4	25.16	Dr. Kober's report of the Cumberland outbreak.
1892	......	......	72	.....	217	85.8	25.36	
1893	......	......	188	.....	212	81.2	23.25	Mar. 3. Appropriation for improvement of Dalecarlia reservoir.
1894	......	39	546	.....	228	85.8	21.89	Feb. 5. Dr. Smart's address on water supply. June 6. Medical Society's report on typhoid fever. July 1. War Department's report on water supply, by Col. Elliot.
1895	......	47	375	....	216	79.3	21.23	Mar. 2. Milk law enacted. July 28. Dalecarlia revervoir put into use. Dec. 2. Health Department report on typhoid fever, by Dr. Kober.
1896	......	26	800	.....	148	53.7	21.16	May. 19. Compulsory drainage act passed.
1897	......	2	973	.....	127	45.7	19.75	
1898	......	11	711	.....	191	67.5	20.54	Mar. 21. Marine Hospital report on water supply, by Dr. Kinyoun. June 30. Appropriation for investigating feasibility and propriety of filtration.
1899	596	38	381	.....	200	69.3	20.32	
1900	806	0	337	.....	219	74.5	20.61	March 28. War Department's report on water supply, by Col. Miller.
1901	957	5	280	.....	169	56.4	20.19	Feb. 19. Senate Committee's report on filtration. Mar. 1. Appropriation for filters.
1902	2265	0	280	1474	226	74.0	18.95	Jan. 8. Washington City reservoir put into service. Feb. 4. Law requiring reports of cases of typhoid fever enacted.
1903	3399	0	363	1055	140	45.0	19.09	
1904	4092	0	208	1006	139	43.8	19.61	
1905	3633	7	197	1097	142	43.9	19.20	Aug. 18. First filters put into service. Oct. 5. Entire water supply filtered.
1906	3526	11	197	1126	162	49.6	19.35	Apr. 4. Regulations governing keeping and disposal of manure. Apr. 24. Regulation promulgated requiring candy, etc., sold on streets to be covered. Nov. 7. American Society of Civil Engineers' discussion of water supply. Nov. 8. Engineering News' report on typhoid fever, by Mr. Horton.
1907	....	.....	.....	.....	......	....	....	Feb. 16. Public Health and Marine Hospital Service report on typhoid fever. Mar. Geological Survey's report on the Potomac River Basin. May 21. All shallow wells ordered closed. May 31. Regulation promulgated, requiring stores to be screened. July 8 and 27. Nine shallow wells excepted from order of May 21.

TYPHOID FEVER IN THE DISTRICT OF COLUMBIA.

TABLE II.—Death rates per hundred thousand for white and for colored people from 1894 to 1906, inclusive.

(Deaths from "typho-malarial" fever are included.)

Death Rates.				Ratio white death rate to colored death rate.	
Year.	Whites.	Colored.	All.	From Typhoid Fever.	From All Diseases.
1894	80.2	97.5	85.8	1 to 1.21	1 to 1.73
1895	67.5	104.4	79.3	1 to 1.55	1 to 1.61
1896	48.4	65.0	53.7	1 to 1.34	1 to 1.65
1897	38.5	61.1	45.7	1 to 1.58	1 to 1.77
1898	52.1	100.9	67.5	1 to 1.94	1 to 1.69
1899	48.4	115.4	69.3	1 to 2.41	1 to 1.77
1900	64.0	97.8	74.5	1 to 1.53	1 to 1.72
1901	42.8	87.1	56.4	1 to 2.03	1 to 1.82
1902	71.5	79.7	74.0	1 to 1.11	1 to 1.86
1903	38.1	60.8	45.0	1 to 1.60	1 to 1.74
1904	35.5	63.4	43.8	1 to 1.79	1 to 1.73
1905	40.0	53.3	43.9	1 to 1.33	1 to 1.90
1906	35.4	84.2	49.6	1 to 2.38	1 to 1.86

DEATH RATES FOR 1905 IN STREETS AND ALLEYS, COMPARED.

	Whites.			Colored.		
	Streets.	Alleys.	Ratio.	Streets.	Alleys.	Ratio.
General death rate per 1,000	13.2	15.2	1 to 1.15	28.4	28.9	1 to 1.02
Typhoid fever death rate per 100,000.	39.8	57.5	1 to 1.44	55.7	42.0	1 to 0.75
Population	225,689	1,739	....	79,036	16,659	....

TYPHOID FEVER IN THE DISTRICT OF COLUMBIA.

TABLE III.—Prevalence and cause before and after Filtration of Public Water Supply.

	1902[1] and 1903.	1904.	1905.[2]	1906.
Cases reported	2329	1006	1097	1126
Deaths reported	293	141	142	162
Per cent of fatal cases	12.58	14.02	12.94	14.39
Case histories obtained	1927	892	973	1092
Cases infected outside of District of Columbia	231	146	170	202
Cases of local origin	1696	746	803	890
Cause of cases of local origin:				
No. attributed to direct contact	140	56	55	51
No. attributed to milk	26	0	23	59
No. of unknown origin	1530	690	725	780
Per cent attributed to direct contact	8.26	7.51	6.85	5.73
Per cent attributed to milk	1.53	0.00	2.86	6.63
Per cent of unknown origin	90.21	92.49	90.29	87.64
Origin of drinking water used by local cases of unknown origin prior to onset of illness:				
Potomac water exclusively	1172	610	648	660
Potomac water in part	145	12	25	67
Well water	162	49	43	34
Spring water	27	18	8	9
Bottled waters	12	0	0	10
Melted ice	12	1	1	0
	1530	690	725*	780

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[1] Figures for "1902 and 1903" cover the period from the time when the law requiring cases of typhoid fever to be reported, enacted February 4, 1902, became practically operative, to the close of 1903.

[2] Entire public water supply, except well water, filtered since October 5, 1905.

TYPHOID FEVER IN THE DISTRICT OF COLUMBIA.

TABLE IV.—Relation between the number of bacteria in the public water supply and the prevalence of typhoid fever.

("Typho-malarial" cases and deaths are included.)

Date.		Bacteria per c. c.		Typhoid fever.		Date.		Bacteria per c. c.		Typhoid fever.	
		No. of observations.	Average count.	Cases reported.	Deaths.			No. of observations.	Average count.	Cases reported.	Deaths.
1886.	Samples of tap water.					1905.	Samples from clear water reservoir.				
Jan.		2	3,774	....	10	Nov.		25	27	80	14
Feb.		4	2,536	....	5	Dec.		26	60	51	67
Mar.		5	1,210	....	10	1906.					
Apr.		4	1,521	....	8	Jan.		27	39	27	6
May.		3	1,069	....	7	Feb.		24	16	21	4
June		2	348	....	5	Mar.		28	19	18	5
July		2	255	....	17	Apr.		25	22	35	4
Aug.		1	254	....	26	May		27	17	44	10
Sept.		2	178	....	18	June		26	17	58	9
Oct.		3	75	....	16	July		24	26	181	21
Nov.		1	116	....	12	Aug.		28	14	293	32
Dec.		2	967	......	17	Sept.		23	14	150	20
1887.						Oct.		27	16	171	28
Jan.		3	882	....	4	Nov.		25	12	82	19
Feb.		....	....	....	4	Dec.		25	45	46	4
Mar.		....	....	....	7	1907.					
1899.						Jan.		28	68	53	7
July		14	67	....	10	Feb.		28	45	32	6
Aug.		15	269	....	39	Mar.		30	64	25	4
Sept.		26	221	....	30	Apr.		27	21	28	6
Oct.		25	137	....	28	May		25	26	37	7
Nov.		25	431	....	29	June		25	18	36	2
Dec.		15	597	....	26	July		24	17	82	10
1900.						Aug.		31	17	191	18
Jan.		26	15,873	....	17	Sept.		27	32	187	17
Feb.		22	9,232	....	6						
Mar.		....	....	....	8						
Apr.		....	....	....	10						

TYPHOID FEVER IN THE DISTRICT OF COLUMBIA.

Table V.—Relation between the frequency of the finding of colon bacilli in the public water supply and the prevalence of typhoid fever.

("Typho-malarial" cases and deaths are included.)

Date.		Colon bacilli.		Typhoid fever.		Date.		Colon bacilli.		Typhoid fever.	
		No. of specimens examined.	Per cent containing colon bacilli[1]	Cases reported.	Deaths.			No. of specimens examined.	Per cent of 10 c. c. containing colon bacilli.	Cases reported.	Deaths.
1897.	Samples of tap water.					1906.	Samples from filtered water reservoir.				
July		....	30	....	10	Jan.		....	....	27	6
Aug.		....	33⅓	....	18	Feb.		24	0	21	4
Sept.		....	70	....	20	Mar.		27	0	18	5
Oct.		....	70	....	13	Apr.		25	4	35	4
Nov.		....	40	....	10	May		27	0	44	10
Dec.		....	20	....	18	June		26	0	59	9
1898.						July		21	5	184	21
Jan.		....	20	....	8	Aug.		27	4	295	32
Feb.		....	25	....	4	Sept.		25	8	155	20
Mar.		....	....	....	2	Oct.		27	4	171	28
Apr.		....	....	....	9	Nov.		25	8	82	19
						Dec.		24	8	46	4
						1907.					
						Jan.		26	12	53	7
						Feb.		23	0	32	6
						Mar.		26	0	25	4
						Apr.		26	4	28	6
						May		26	0	37	7
						June		25	0	36	2
						July		26	0	82	10
						Aug.		27	0	191	18
						Sept.		25	4	188	17

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[1] The record does not disclose the size of the sample examined.

REFLEX NEUROSES WITH PARTICULAR REFERENCE TO EYE-STRAIN.*

By D. KERFOOT SHUTE, A.B., M.D.,

Professor of Anatomy and of Clinical Ophthalmology.

Reflex action plays a part of fundamental importance in physiology. It is also of very wide prevalence in the production and fixation, first, of abnormal physiological states, and, secondly, of morbid anatomical conditions. We are aware of the fact that often in the past and too often in the present, specialists in the various branches of medicine have unduly and unwarrantably, accounted for distant pathological conditions exclusively through abnormal states prevailing in the domain of their several specialties. The tendency of the present day is to permit the reflex pendulum to swing too far in the opposite direction and to ignore too greatly the extreme importance of reflex action in the production of pathological conditions.

In the female disturbance of the auditory centers is not uncommon in ovarian and other internal disorders.

The relation between aural and ocular derangements has recently been emphasized by Cleveland and Oliver and many of these relations are clearly reflex in character. The trifacial nerve supplies many filaments not only to the eye but also to the middle ear and in the latter location a close association exists between the sympathetic and cranial nerves. As a result morbid conditions of the eye may, by reflex actions, so interfere with the trophic conditions of the middle ear as to induce not only functional disturbances but even organic changes in the tissues.

It has been proved that dental caries may, by reflex action, produce not only a functional disturbance of the organ of hearing, but also an acute inflammation of the middle ear. The so-called "sympathy" between the ear of one side and that of the other, which was recognized long ago by Wharton Jones, Kramer and other writers, is the result of the reflex action of a diseased ear upon the other ear. This reflex action from one ear to the other leads at first to functional disturbance and then to atrophy. While in many cases it is dependent upon the decussation of the auditory fibers, it is also brought about by the associations of the auditory and sympathetic nerves. Recently Urbantochitz has extensively investigated and written upon this subject. Aurists of experience tell us that inflammations of the middle ear have been caused by dentition. In children particularly a reflex otalgia occurs depending upon the eruption of molars or upon early dental caries. Dench in his work upon "Diseases of the Ear" says that a pathological condition in any portion of the body may produce within the organ of hearing not only alterations of function, but also certain visible changes. A ready anatomical and physiological explanation is that through a reflex stimulus from a distant part changes take place in the vascular supply through the action of the vasomotor nerves and that the aural phenomena are developed on account of capillary dilatation. As illustrations we may refer to the giddiness frequently encountered in disorders of digestion and due to the fact that the nucleus of the vagus lies so closely to the center of the vestibular nerve. In like manner may be explained transient attacks of impairment of hearing accompanied by subjective noises of an intense character due to the fact that the center of the vagus in the medulla oblongata lies very close to the nucleus of the cochlear nerve. Aurists teach us that tinnitus is of common occurrence as the result of a pathological condition of the pelvic viscera, of subacute gastritis, of constipation, etc. Likewise a moderate impairment of hearing may be due to visceral disturbances, particularly of the pelvic viscera. Aurists of large experience tell us that a reflex stimulus may cause so great a transudation of serum or blood within the tympanum as to cause a rupture of the membrana tympani; also that herpes occurs on the auricle as a result of reflex action. Hypersensitive areas may occur as the result of reflex action, in an otherwise normal external auditory meatus. A group of symptoms of rare occurrence is noted by aurists known as angioneurotic edema and which is entirely of reflex origin. This edema is accompanied by exquisite pain and tenderness. Should the angioneurotic edema accompany a simple and otherwise uncomplicated acute middle ear inflammation it would constitute a pseudo-mastoid disease and might easily lead to the diagnosis of true mastoid disease, and the performance of a useless surgical operation. Dench states that all reflex aural disturbances, particularly those of a painful character, are most frequently met with in females of a neurotic or hysterical type. So much for the testimony of aurists as to the importance of reflex action in inducing functional and organic diseases of the ear.

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* Paper read by invitation, before the "National Association of Pension Examining Surgeons," in Washington, D. C., in May, 1907.

Rotch, in his work on Pediatrics, says that the twitching and a certain amount of discomfort and fever which occur in children, at the time when a tooth is the apparent cause, should be referred to as a significant illustration of nervous phenomena from reflex causes. He says further that convulsions of a reflex nature occur at this time, and cease when the tooth has assumed its place above the margin of the gum. The rythmical oscillation of the eye-balls known as nystagmus occurs occasionally as a congenital disease and may persist throughout life. Sometimes it is dependent upon organic disease of the brain, such as meningitis and hydrocephalus, multiple sclerosis, cerebellar abscess and tumor, and again may arise from local diseases of the eye. In many cases this condition is induced reflexly from various peripheral stimuli and is not, according to Rotch, a very uncommon symptom in young children. He states that he has notes of two cases, brothers, who during the dental period showed this oscillation of the eyeballs with no other symptoms. He states further that gyrospasm (rotary movements of the head) and spasmus nutans (nodding) are peculiar movements of the head in young children which are apparently of a reflex origin and are at times associated with nystagmus and strabismus. He states further that the chief causes are idiocy, rachitis, gastro-enteric irritation, and dentition. Nothing illustrates more forcibly the reaction of medical thought and practice, than the attitude of the medical profession towards gum-lancing. It was erroneously believed in former times that almost every disease which occurred in early life was due to dentition and gum-lancing was practised indiscriminately. Now at the present time, an almost equal amount of indiscrimination is displayed in refusing to do any gum-lancing at all. There are well-defined and indisputable clinical facts that positively demonstrate the value of gum-lancing in certain judiciously selected cases, and by this gum-lancing certain very grave reflex symptoms are immediately relieved. No ophthalmologist has ever claimed the indiscriminate influence of eye-strain over other portions of the body that the older pediatricists claimed for dentition over all the ills of childhood. Not even that much misrepresented and misunderstood, though level-headed and distinguished ophthalmologist, Dr. George M. Gould, has made a tithe of the claims for eye-strain that the older writers on the diseases of children made for dentition, and which the medical public so gullibly accepted, while now they so irrationally reject so large a part of the extremely valuable teachings of Dr. Gould. I am profoundly convinced, from fifteen years' practice in ophthalmology, that if the general practitioners would give heed to the invaluable teachings of Dr. Gould, untold suffering would be banished from thousands and thousands of people. The writer is convinced that the reflex ocular neuroses are much more extensive and important than the general practitioner is aware of and he has therefore thought that it might prove interesting as well as instructive to present the subject to this distinguished body in a brief and conservative manner. All physicians are aware of the fact that eye-strain will produce severe headache for instance, but many are not aware of the fact that there are many other serious results that follow eye-strain, such as insomnia, petit chorea in children, vertigo, stomach derangements, impaired general nutrition, etc.

Slight errors of refraction, frequently dating from birth, often have a gradual injurious influence upon the nervous system, similar to the dropping of water upon a stone. The incessant impacts of reflex irritations upon the nerve-centers from any organ—eye, ear, ovary, tooth, or what not—often lead to the over-leaping or shunting of these irritations to neighboring or more remote nerve-centers; and we thus have a perfectly rational anatomical and physiological basis for many otherwise obscure reflex neuroses. When these reflex irritations are constantly occurring in persons of sensitive, highly-strung temperament, the wonder is, not that reflex neuroses occur, but that they are not more frequent. As a matter of fact these reflex neuroses are much more common than is generally supposed.

Eye-strain, productive of reflex neuroses, is of two types, viz., (1) Accommodative (due to ametropia or anisometropia) where the intrinsic ocular muscle—the ciliary muscle—is attempting to overcome low grades of astigmatism, hypermetropia, etc. (2) Muscular (due to heterophoria) where the extrinsic ocular muscles are in a condition of imbalance.

Probably in the great majority of cases this imbalance of the extrinsic ocular muscles is due to the low grade errors of refraction. At the beginning it is very important to emphasize strongly the fact that eye-strain is very commonly the cause of serious reflex neuroses, in children and adults alike, when no complaint is made whatever about the eyes, and when vision both for distance and near objects is perfect. Many physicians think that, because a patient has a vision for distance which is 20/20 (6/6) or can read easily Jaeger type No. 1, at 33 centimeters (13 inches), he has normal eyes. It cannot be emphasized too strongly that this is a very serious error. Moreover, under the above circumstances even a trained ophthalmologist can never be certain that a person under 45 years of age has normal eyes without the use of a cycloplegic. While many people suffer greatly from small errors of refraction, and from muscular imbalance, there are others who have no bad effects whatever. A sufficient explanation for this exists in the difference of general health, vocation, temperament, and environment in different individuals.

The reason that low grade errors of refraction cause so much trouble while high grade errors commonly do not is because, in the former cases, the ciliary muscle, by unequal and irregular contractions, can overcome the effects of the refractive error and so cause eye-strain, but in the high refractive errors a compensating irregular contraction of the ciliary muscle cannot occur—hence the absence of eye-strain in the latter cases.

An extremely interesting group of reflex ocular neuroses are those where we find nervous or sick headache and general nervous symptoms, such as insomnia, irritability of temper, nausea, vomiting, facial chorea in children, etc., and constituting a symptom complex which can be entirely relieved by the correction of an error of refraction which throughout life had been the unsuspected cause of much suffering.

There are other cases in which the ocular defect leads to a tense post-ocular pain shooting back to the occiput and nape of the neck, and down the spine, even radiating to the shoulders and arms. There are other cases recorded by skilled and experienced ophthalmologists where great pain in the region of the heart, and which caused great anxiety, was entirely relieved by correcting an astigmatism against the rule and by a tenotomy for a hyperphoria (Risley). Many patients ascribe their symptoms to hunger, biliousness, and overfatigue, heredity and many other things, except the true cause, viz., eye-strain. One of the most striking things in ophthalmology is the constant handing down from parent to child of compound hypermetropic astigmatism with, therefore, headaches which are supposed to be hereditary and incurable, where a pair of glasses would entirely cure the headache and accompanying reflex neuroses. Many cases like the following occur in the literature of ophthalmology. A professional man (physician) suffered from almost constant occipital pain, was in despair on account of insomnia, considered himself a chronic dyspeptic, and for many years was in constant terror because of his insomnia, and premonitions of impending calamity. He had consulted many colleagues in different cities without lasting relief. He was finally advised to take a long sea voyage on a slow sailing merchantman. He had left home a "nervous wreck" and had returned after six months much improved in many ways. But as soon as he entered upon his work as a rhinologist all of his old symptoms speedily returned. He had normal acuity of vision and no subjective ocular symptoms. There was a low grade of astigmatism, a tendency for the two eyes to converge, and a tendency of the right eye to deviate upwards. As soon as the refractive error was corrected by glasses, and the vertical deviation of the right eye relieved by an operation, all of his symptoms promptly vanished, not only the headache and insomnia, but also the dyspepsia. He ate with impunity, the morning following the operation, a hearty breakfast of sausage, buckwheat cakes, and coffee, and continued with impunity to eat anything he desired for years afterwards. His general health improved and he continued his work ever since with entire comfort (Risley).

Not only is insomnia caused by eye-strain, but also the very contrary condition such as great drowsiness.

The cause of what the English call "Academy headache" (sightseers headache") has been attributed by Simeon Snell of Edinburgh to throwing the gaze above the horizontal line, especially without a corresponding uplifting of the head, thus straining the elevators of the eyes. Any one watching visitors to a picture gallery will observe how often the eyes must be turned upwards to see the pictures that are hung above the level of the head. Certain cyclists suffer from this Academy headache when they lean on the handle bars with the head lowered. The nystagmus of miners is supposed by Snell to be due to the weariness of the elevators of the eyeballs brought about by their constant turning upwards of the eyes with their bodies in very constrained positions.

Dr. Gould has written most instructively and entertainingly upon the optic and ocular factors in the etiology of the scoliosis of school children. He has shown conclusively that astigmatic children with unsymmetric oblique axes (especially in the dominant eye) develop a compensatory curvature of the spine on account of the habitual lateral inclination of the head. This physiological sclíosis may readily degenerate into a pathological and organic spinal curvature. It seems to the present writer overwhelmingly reasonable that orthopedic surgeons in these cases should be careful to eliminate the factor of eye-strain.

The use of emmetropic eyes under improper physical posture, unhygienic conditions of light, unusual direction of line of fixation, will cause asthenopia (painful sight), and reflex neuroses in healthy individuals; how much more, therefore, will abuse of the eyes produce reflex neuroses in those who are infirm from any cause or who have ametropia!

There are a number of able, successful and widely experienced ophthalmologists who teach that true chorea and true epilepsy may, under certain circumstances, be made worse by eye-strain, and may even at times be developed by this factor. I will not enter upon the controversy now or quote the authorities for and against the proposition. The last word has by no means been said upon the subject. Any widely experienced ophthalmologist will tell you that he has seen epileptiform convulsions and choreic movements abolished by the relief of eye-strain. All that the conservative opthalmologist advises is that when you have to deal with obscure nervous affections, with epileptiform convulsions, various choreic movements, " habit chorea ", vertigo, nausea and vomiting, pain over the mastoid region (pseudo-mastoid disease at times), pain in the right inguinal region (possibly pseudo-appendicitis), obscure pains over the heart, torticollis and spinal curvature, migraine, hysteria, neurosthenia, apparently stupid children, incorrigible children and adults, insomnia, great irritability, extreme depression, impaired memory, difficulty of concentration of thought, apprehension, lack of self-confidence, exhaustion and weariness, and the like, as well as headache, it may well be worth your while to eliminate the factor of eye-strain. No harm can possibly be done, and on the other hand every good may be accomplished. As Gould has so ably and brilliantly insisted, eye-strain is a factor of tremendous importance in modern civilization. It will well repay you as general practitioners to read his delightful Biographic Clinics. In my judgment, and from my experience, they teach vastly more that is true than is erroneous. In my judgment Gould has done a vitally important work in reviewing the earlier writings of Thompson and Weir Mitchell, and insisting upon their great importance, and he has done an immense idamount of first class work himself by his scholarly and able writings. When a child is removed from school on account of physical or mental disability, when the professional man is taken from his books and his work, when the skilled artisan must abandon his duties on account of disabilities, when the literary man and woman are unable to continue their chosen activities, it is all very well to insist upon the importance of rest, out-door exercise, recreation, change of scene, and climate, tonics, massage, and such like—they are all of great value. But they will not cure reflex neuroses due to eye-strain. Discriminating students of biography and experienced ophthalmologists know that when these persons resume their routine duties and vocations only too often the old distressing complex symptoms return. They know also that frequently in these persons eye-strain is found when it is looked for, and complete relief frequently follows the correction of an error of refraction or a muscular imbalance. The eyes are so extremely complex, they are so intimately related to the central nervous system (the retina is actually a portion of the brain), each eye is supplied by five out of the twelve cranial nerves not to mention the sympathetic nerves, they are so absolutely essential not only to the well being and happiness but even to the life of the individual, they are so increasingly being used, in our comparatively brief modern civilization, for near work of increasing difficulty, whereas for ages and ages before, they were mostly used for distant observation, that it is incomprehensible to me why they should be so wantonly abused and non-safeguarded.

Every child on entering school ought to have its eyes examined carefully under a cycloplegic. Every person wearing glasses ought to have the eyes examined every year or two. Every person developing symptoms which may possibly be of a reflex character referable to the eye, would be better treated by eliminating the possibility of eye-strain. Nor would I have it understood for a moment that I am endeavoring to put the eye upon a pedestal of exclusive importance from the point of view of reflex neuroses. Reflex neuroses occur from many other portions of the body when diseased as I have indicated in the earlier portion of this paper. The writer is simply an ophthalmologist and for this reason he deliberately chose for the earlier part of this paper illustrations of reflex neuroses from Otology and Pediatrics. In this paper he has simply wished, as an ophthalmologist speaking to general practitioners to emphasize the very great importance that he attaches, from his reading and his personal experience, to eye-strain as an important factor in many painful and distressing and often obscure reflex neuroses.

HOSPITALS AND ASYLUMS OF EUROPE.

By WILLIAM A. WHITE, M.D.,

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During the past two summers I have taken my vacation trip abroad, and on each trip have taken occasion to visit a number of hospitals, particularly hospitals for the insane, and these latter I inspected as thoroughly as the circumstances and the time at my disposal permitted. During the summer of 1906 I visited in all twenty-four hospitals, viz:

In or near Paris I visited La Bicêtre, La Salpêtrière, Bourneville's Institution for Feeble-Minded Children, the asylum at St. Ann, and the asylums at Villejuif and Charenton.

In Belgium I visited the Colony for the Insane at Gheel.

In the German Empire I visited the Provincial Asylum at Bonn, the asylums at Heidelberg, Frankfurt, Giessen, the Psychiatric Clinic at Munich, and the new asylum near Munich, Eglefing. Near Berlin I visited Hertzberg, the Institution for Epileptics, Wuhlgarten, the new institution now building at Buch, and the new Tuberculosis Hospital at Buch. At Vienna I visited the General Hospital (Allgemeines Krankenhaus), and the Asylum. At Prague I visited the General Hospital (Allgemeines Krankenhaus) and the Psychiatric Clinic.

In London I visited the Bethlehem Hospital, the Claybury County Asylum, and Guy's Hospital.

In regard to all of these institutions I may say that the problem of insanity is very much the same the world over, and has been solved in general in the same way. The institutions of the different countries differ largely in matters of detail, which of course are more or less dependent upon purely local conditions. In none of the institutions, however, did I see evidences of the amount of liberty which is so conspicuously a feature of the American hospitals. For instance, they were all surrounded by walls, and seemed to adhere very strictly to distinct rules as regards hours of visitation, etc., there being apparently very little effort made to accommodate friends or relatives at other times.

In all of the institutions except those in France there is the single-headed management. In France, however, there is a business head of the institution, and I must say that these hospitals appeared to be among the least well conducted of any that I saw. The medical director oftentimes either lives away from the hospital or spends but a small portion of his time there, the several medical services being to all intents and purposes separate institutions and having little organic connection.

In the French institutions I saw some evidences of mechanical restraint, although at St. Ann the physician with whom I made rounds, Doctor Simon, told me they used absolutely no restraint whatever. This is very commendable, as it is the central receiving hospital for Paris, and Doctor Simon told me that they had 2,000 admissions per annum on the female side alone. In France, however, as on the Continent generally, many patients are sent to hospitals for the insane who perhaps would not be in this country. There are no tedious legal formalities required for commitment, and patients generally who show mental symptoms are sent to the asylum. This includes each year quite a considerable number of cases of alcoholism.

In Germany there is a great deal of activity along psychiatric lines, and considerable progress is shown in the problems of construction of German institutions. It is noticeable that in practically none of the hospitals abroad are the buildings over two stories in height, whereas in this country we have only recently come to realize the desirability of putting up two-story buildings. They have evidently been building their hospitals two stories high for a long time. The old Bicêtre and the Salpêtrière have no buildings higher, while the general hospitals in Vienna and in Prague are of the same two-story construction. This maintains in practically all of the institutions that I saw throughout Germany.

The German institutions are all well built, although some of them now are getting rather old. They are all approximately the same size, accommodating from twelve to fifteen hundred patients. The Germans seem to think that larger institutions are not desirable, and when their institutions become crowded instead of adding buildings to already established hospitals they build new institutions. This results in giving a finished appearance to each hospital and it does not become necessary for a superintendent to be everlastingly endeavoring to remodel his institution to accommodate a constantly increasing population. The new institutions in Germany, however, are most exquisitely built, apparently almost regardless of cost. The Psychiatric Clinic at Munich was built by the University, and is intended to accommodate only 120 beds, and cost 2,000,000 marks, ($500,000). That is $4,000 per bed. The institution now building at Buch is to accommodate 1,000 patients, and to cost when completed 13,000,000 marks. This is something over $2,000 per bed, which, considering the cheapness of labor and the general cheaper cost of construction in Germany, is to say the least a very liberal allowance as compared, for instance, with the Government Hospital, the new extension of which cost less than $1,500 per bed. This institution is composed of two classes of buildings—large buildings for the more strictly chronic and custodial class of insane accommodating about 100 beds each, and smaller cottages accommodating 25 to 30 patients. There are also accommodations for the criminal insane, for there, as elsewhere, there appeared to be no institution for criminal insane, each hospital taking care of the criminals in its district.

The great care that is shown in details of construction is well illustrated in the building of the wall about this hospital. All of the large hospital buildings are built in the form of a rectangle, the wall merely connecting the buildings. This makes it only necessary to construct a sufficient amount of wall to occupy the space between the buildings, the ends of the buildings themselves filling in the interval. Besides this the ground is graded away from the foot of the wall for a considerable distance, so that a little way off the wall itself is hardly noticeable. This method of construction has been still more fully carried out at the new asylum (Mauer-Oehling) just outside of Vienna, which unfortunately I did not have time to visit. Here the ground is graded both inside and outside so that the wall itself merely sets in a depression, its top being on a level with the ground on each side. Hedges are then planted along on each side, making the wall quite invisible from within or without.

The new institution near Munich, Egelfing, is perhaps the most beautiful and the most complete in structural detail of any of the Continental hospitals for the insane. It was built to accommodate 1,200 patients, and they have almost that number there now, and cost between 8,000,000 and 9,000,000 marks, or in the neighborhood of $1,700 or $1,800 per bed. This is a beautifully situated hospital in the center of an immense valley of excellent farming land, and consists of about 60 buildings entirely upon the cottage plan, small cottages built to accommodate anywhere from 25 to 40 patients. They are all completely equipped in every detail and the architecture is of an extremely pleasing type. Practically everything has been done to make this institution complete in every detail. All the cottages are connected by a complete system of tunnels, and the most thorough sanitary provisions have been installed throughout.

At the asylum at Heidelberg I was particularly struck on entering to see a class of army surgeons assembling for a lecture on psychiatry. It is true that since the establishment in Washington of the Army and Navy Medical Schools that the students have been sent to the Government Hospital for the Insane to attend the course of lectures on psychiatry given there each year. The instruction of the army and navy surgeons abroad, however, along psychiatric lines is much more thorough than in this country. Surgeons are detailed from the service to serve as assistants in the various hospitals for the insane and in that way gain an experience impossible to get in any other way. Actual contact with the insane is absolutely essential to the understanding of their condition, and, aside from its general educational advantages it should be fostered, for by this means alone can the enlistment of mental defectives be reduced to a minimum. This matter is appreciated abroad as instanced by several papers on the subject that have recently appeared in the foreign literature. The men thus detailed to the hospitals for the insane often do excellent work and I have met them in the laboratories and clinics and noted their names on the programs of scientific meetings. We would do well to follow the suggestion of the European countries in this matter.

In both Buch and Egelfing the isolation room is largely used and most admirably constructed. The windows are either located out of reach of the patient or else are made of heavy glass in small panes set in steel sashes, so that the room can be thoroughly lighted, and yet there be very little possibility of a patient being able to obtain broken glass with which to injure himself. In some institutions, too, especially in the Psychiatric Clinic at Munich, I found all of the telephones, electric-light fixtures, water-faucets, and apparatus for raising and lowering transoms located within cupboards set in the wall and inclosed in a steel frame fitted flush to the surface, and painted the same color as the wall. They were practically unnoticeable.

In Germany I found pretty generally in use the so-called continuous-bath (Dauerbad). This is used for the treatment of the disturbed class of insane. I had for some time contemplated installing this system at the Government Hospital, but desired to see it in use abroad first if possible. This I have now seen, and two continuous-bath rooms have since been equipped and put in operation at the Government Hospital. It is to be hoped that it will go a considerable way toward solving the problem of the proper care of the most disturbed class of cases.

The institutions in the Austrian Empire that I visited are all very old. The Psychiatric Clinic at Prague, which is a portion of the General Asylum, the physician in charge told me, was 75 years old, and some of the other buildings connected with the institution were older yet. This clinic was in a greatly overcrowded condition, and it was apparently almost impossible to give proper care to the patients, and yet from this clinic, under the direction of Dr. Arnold Pick, there issues some of the best psychiatric work on the Continent. I saw here, as also in Vienna, the so-called "gitter" bed, which I was told was entirely an Austrian product. This bed is made by extending the iron posts at each corner about 4 feet above the bed and then surrounding them on all sides and above by a heavy rope net. Patients who are disturbed, or are disposed to get out of bed and run around the ward or make trouble in any way, are placed within this inclosure, one side of which is used as a door, being locked in place so that they cannot get out. The doctor told me that he did not at all approve of this arrangement, but that it was made necessary by the overcrowded condition of the hospital and by lack of a sufficient number of nurses.

I spent a most delightful afternoon at Gheel, about half an hour from Antwerp, where the colony system has been in vogue for so many years. This institution extends its jurisdiction over many square miles of surrounding country. This country is inhabited by a simple peasant class, whose sole occupation is tilling the fields. The hospital receives only the quieter class of patients, whom it is presumed are suitable for colonizing, although it has a central hospital building where patients can be taken care of provided the become temporarily disturbed or are ill. Arrangements are made by the hospital authorities with the peasant families to take one or two patients for which they are paid a nominal compensation, receiving their main return in the work which the patient is able to do. I visited several houses where patients were cared for in this way. In every instance the houses were scrupulously clean and severely simple. The patient's room was about the same in each instance, very small, perhaps 10 or 12 feet long by 7 or 8 feet wide, containing a single bed, a wash-stand, and a chair. A plain wooden floor, with perhaps a home-made rug by the side of the bed, whitewashed walls, with a crucifix at the head of the bed. The patient assists in the general household work, in looking after the cows, and whatever his strength and intelligence may enable him to do, and each year the hospital issues a diploma to the family who has taken the best care of their patient. These diplomas are very highly prized, and one was shown to me with a great deal of pride. Throughout the territory in which patients are cared for in this way, there are located here or there central bath houses to which all the patients in the near territory go for a bath. The doctors, unless in case of illness, are required to see each patient once a month. In each house a little book is kept where the doctor registers the time of his visit, and also takes the weight of the patient; this latter is done as an index to determine whether the patient is being properly fed or not. The superintendent thinks that 75 per cent of the insane could be cared for in this way. This is perhaps true in such a population as Gheel. This little village is many hundreds of years old, and even now consists only of one little, narrow, crooked street, with peasant houses scattered here and there, occupied by people whose parents and grandparents for generations before have lived there and done the same work. The population is fixed, crystalized, but the experiment which has been so successful there could hardly be applied in this country with its much more restless and ever-shifting people.

The hospitals in England are very much more like our home institutions than any others I saw. The one at Claybury is beautifully situated and throughout has an air of comfort with homelike surroundings that was very agreeable. In English institutions, too, they are much more liberal with the employees and pay them more nearly the rate of wages paid in this country. At Bethlehem, for instance, the female attendants get 60 pounds sterling per annum ($300.00). Employees in these institutions, too, seem to be on the whole a very good class. The Continental hospitals, however, seem to have drawn from a less intelligent body for their nurses. On the Continent, the wages paid are much smaller and the privileges granted are less. This is of course partly due to the greater buying value of money on the Continent.

At Wuhlgarten I found that the employees work twelve to fifteen hours a day, have eight days annual leave, and after they have worked for some considerable time, perhaps two or three years, a male attendant receives as a maximum wage 80 marks ($20.00) per month.

At the institution at Claybury, in England, I saw for the first time a thoroughly constructed so-called padded room. This is made by letting into the floor and the walls for about 7 feet up panels constructed of very heavy rubber, that offers about the same resistance to pressure that a moderately inflated rubber tire does. The joints are made so perfect that the room can be kept absolutely clean, in fact the hose can be turned into it, and if for any reason it is desirable these various panels can one or all be removed. The authorities at the hospital spoke in the highest terms of the advantages of these rooms. A disturbed patient who is liable to thrash about, perhaps fall out of bed or roll about on the floor and hurt himself against walls, is simply placed in this room, with a mattress, pillows, and bed-clothing being provided. He can then thrash about at will and there is little danger of his hurting himself. Windows are placed high in the room, perhaps 10 feet above the floor, so that they are out of reach of the patient. This method of construction has been in vogue for a long time in England, but it has never been adopted to any extent in this country.

As regards the method of commitment, I found nowhere any such method employed as is now in use in the District of Columbia, and against which I have been contending ever since I have been in Washington. In every country I visited the insane are practically sent to the asylum with about as little formality as they are sent to the general hospitals, and in no place that I visited was there anything remotely resembling a jury trial, except in England a jury trial is had, but only when it becomes necessary to appoint a guardian or committee. The commitment is made in England directly by the court. There are several methods but it amounts in general to the court signing the commitment upon satisfactory evidence and upon the examination of physicians. In Germany very often there is no medical examination made. Patients are sent directly to the hospital and the hospital authorities are trusted to keep them or not, as may be necessary. In rare instances a case may be brought before the court for decision, in which instance the court, consisting of its several justices, but having no jury, instead of summoning the patient before it goes to the hospital and sits there and takes evidence. This practically is an almost unheard-of procedure though, it is so rare.

Usually if a patient has a complaint to make, it is referred to the director (superintendent), and if his decision is not satisfactory it may be referred to the medical officer who is appointed by the Government to inspect institutions, and his decision is final. I can repeat what I have many times said in the past, and from a wider experience, that the District of Columbia stands almost alone in the civilized world in its atrocious method of committing the insane.

During the past summer my main objective point was Amsterdam, where I had the extreme pleasure of attending the International Congress on Psychiatry, Neurology, Psychology, and the Nursing of Lunatics. On my way to the Congress and afterwards during the short trip through southern Europe I took occasion to visit a number of institutions. I visited in all eight hospitals as follows:

In Belgium, St. John's Hospital at Bruges.

In Holland, Endegeest and Rhijngeest near Amsterdam.

In Italy, the new hospital for the insane at Padua, the Psychiatric Clinic and the Asylum at Florence, and the asylums at Rome and Naples.

St. John's Hospital at Bruges has no special features of interest from the hospital standpoint. It is one of those simple, homely, European institutions in which the Sisters minister to the sick. It presents nevertheless a great attraction to the tourist in the large collection of truly remarkable paintings by that wonderful early master in oils, Memling.

The Endegeest and Rhijngeest Hospitals are delightfully located in the country district a few minutes ride from Amsterdam. The former is for the insane. Its construction and equipment are very simple but the physician who showed us through had a broad grasp of psychiatric subjects, had studied in Germany and we found him strong in praise of the continuous-bath with which the hospital was fully equipped. On the grounds of the asylum is the house in which Descartes used to live and write—and a hundred feet or so in front of it a small monument erected to his memory.

The Rhijngeest hospital only a few moments drive from Endegeest is for neurological cases and is built more on the plan of a private sanitarium. It is here that Dr. Jelgersma, who is medical director of both institutions, and was the President of the Congress, has his laboratory. The laboratory is finely equipped and has a full force of assistants. Most excellent work is being done here, Dr. Jelgersma being a man of no ordinary abilities in research work along the lines of neuropathology.

At Padua we saw what is probably the newest of the Italian hospitals for the insane. In fact it was not yet finished and is only partly occupied. There were no features of special interest about the institution. It is a well built, attractive looking hospital, constructed along modern lines on the pavilion system. It is situated on a large tract of land just out of Padua, being reached by a short and very pleasant drive. I inquired into the cost of the institution and although my memory does not serve me as to the exact figures, I am sure it was over $1,000.00 per bed and I feel quite sure it was nearly $2,000.00. Notwithstanding the fact that this figure includes the price of the land it seemed to me a tremendous price to pay in a country where one is surrounded on all sides by evidences of the most abject poverty. In this part of Italy the people are much more prosperous, however, than they are further south.

At Florence I found one of the most modern equipments in Europe. Here the psychiatric clinic is located on the grounds of the asylum. All suspected insane persons are sent to the clinic first and from there without additional formality are transferred to the asylum if their condition warrants it. Many are kept, however, for a considerable time and are discharged recovered without having to be sent to the asylum. The process necessary to send patients to the clinic, however, amounts to a commitment, so that the authorities have full power either to retain them there or transfer them to the asylum.

The clinic although built in 1884 contains practically all of the features embodied in more modern constructions. There is a central administrative department flanked on either side by the wings for male and female patients. These two wings open centrally into a large lecture room much as they do in the clinic at Munich. Professor Tanzi, who occupies the chair of psychiatry in the University, is the director of the clinic and delivers his lectures here. He is perhaps the most prominent of the Italian psychiatrists and it is noteworthy that he perhaps is also the most Kraepelinian.

In addition to the lectures here the clinic is provided with a large library, and well equipped laboratories for neuro-pathology and psychology. There are four assistants constantly at work here and they appear to be doing a great deal of most excellent work. The first assistant, Dr. Rossi, is a man of wide scientific attainments who has already published much valuable work.

The manicomio (insane asylum) at Rome was the next one to be visited. Our visit here was in many respects a most remarkable experience. The main entrance to the hospital is in a dirty, narrow little street, the front doorway opening through a high, forbidding looking wall that seems to reach an interminable distance in every direction. On passing this doorway one enters a small reception hall from which a flight of marble steps leads up to a large corridor. After reaching this corridor one follows it for several hundred feet as it winds up a steep hill and finally opens on the remains of old gardens that were at one time private property. In fact the house that used to be occupied by the owner of this magnificent site is now used as a ward for some of the better class of patients. Following the winding paths of the gardens still further to the top of the hill I realized for the first time that I had mounted to an eminence overlooking the city for there at our feet was the magnificent panorama of Rome. Directly in front of us was the Vatican, the windows of the Pope's chambers, touchingly referred to by the doctor as the "poor captive," directly facing us.

As to the hospital itself there is little to be said in its praise except that it has a well equipped laboratory which showed evidences of being put to good use. The first assistant, Dr. Bonfigli, who very courteously conducted us through the hospital, appeared himself to be greatly interested in this side of the work and showed us a number of most interesting and instructive sections from work that he was engaged in.

The care of the patients appeared to be most deplorable in every way. This was especially noticeable in the disturbed wards for men. I have been living in hospitals for the insane for some fifteen years but never before have I seen such a sight as greeted my eyes as I entered these wards. Every patient, without a single exception, was tied hand and foot to the bed and every patient was a good example of the "howling lunatic" one reads about but which I had come to think did not in reality exist except in rare instances. It must be said, however, in justice to the hospital that all appearances indicated that they were obliged to do with very small appropriations. The number of attendants was extremely limited and all the appointments were of the simplest kind. Cheap care of the insane is always poor care.

The last institution visited was the manicomio at Naples. This institution is situated in the heart of the city and at its most elevated portion, it being necessary to climb a long steep hill to reach it. It is a very old building, having previously been a convent. The physician on duty received us in the laboratory where he was at work and we had a very pleasant conversation with him touching various scientific matters pertaining to psychiatry, and intimated that we would like to look over the hospital. He showed us very plainly that he did not care to grant this wish but finally on our insistence he went out of the room and evidently instructed several people to get things in shape for us to look at. After waiting some twenty minutes we were gingerly shown into two wards where all the patients had been previously lined up for our inspection.

The hospital is not only old but very primitive in its appointments and gave the same indication of small appropriations as did the one at Rome. The medical staff consists of some fourteen physicians who visit the hospital and make rounds on their several services each morning. One of the fourteen, however, is detailed for service throughout the twenty-four hours, so that one physician has such a detail once in two weeks. He is the only physician in the hospital after the morning rounds are made, and as there are some 1200 or 1400 patients it can readily be seen that the hospital very largely takes care of itself, especially when the one physician who is on duty spends all of his time in the laboratory. This is the expression of the extreme position to which the methods as they prevail in Europe in many places logically tend.

To my mind the chief distinction between the hospitals on the Continent and those of this country are that the European hospitals exert their efforts primarily along the lines of scientific advancement, while the American institutions exert their efforts primarily in the care of the patient. In the former instance if one or the other must suffer it is the care of the patient, in the latter instance, scientific research work. A great deal might be said upon the best method of dealing with the problem of uniting both of these interests. This, however, is an administrative problem and this is not the place in which to discuss it. It is quite clear that the physicians at both Rome and Naples understood that this feature, namely, the care of the patient, had not been properly provided for, for they both by their general attitude and manner endeavored to excuse the very evident conditions. I think therefore that the main fault lies in the extreme poverty of the country which makes adequate appropriations impossible. This was very well illustrated by a number of placards that were posted in the vestibule at the entrance to the Naples institution; they called for competitive examinations to fill the position of chief of staff in some two or three Italian institutions. The highest salary offered by any one of them was 3000 lira per annum and maintenance, the equivalent of approximately $600.00. It is surely well for the peace of mind of the physician who has to live on such a pittance that he has scientific interests with which to console himself.

It seemed quite surprising that in a single country conditions could be so widely different as at Naples and Rome on the one hand as compared with Florence on the other. It all goes to show I think that Italy is not even yet a completely united country and that the different portions still lead to a certain extent an autonomous existence. I heard on every hand, however, the highest praise for the King, whom it seems is exerting his every influence to help the country out of its poverty-stricken condition by the development of its commerce and natural resources.

It may be interesting, too, to know that something over a year ago a National Committee on the Causes of Insanity was organized under the patronage of the King of Italy. I had the honor of sitting with the Committee during its meetings in Amsterdam as proxy for the United States representatives who was unavoidably absent. The Committee is composed of representatives of practically all of the civilized countries. Their meetings have resulted thus far in organizing, and appointing a permanent secretary who is located at Zurich, and a permanent meeting place at Lugano. Their main efforts now are being concentrated on getting sufficient funds so that permanent quarters may be secured, clerks hired, and the necessary expenses for the everyday routine of business that will undoubtedly ensue, be met. After this is done they will take up the question of securing through the State Department access to the archives of the various Governments they represent for the purpose of obtaining such material as will aid them in throwing light on the problem under consideration.

Aside from what I saw of hospital construction and management, no small part of the benefits to be derived from such visits as I have recorded above results from the stimulus received by coming into personal contact with the men who are actually engaged in solving the problems of medicine and seeing the places where they do their work. I had the pleasure of meeting a great many physicians who are renowned as specialists in the various departments of nervous and mental diseases, aside from seeing a number of places that are of historic interest in the development of neurology and psychiatry, particularly Charcot's Clinic at La Salpêtrière.

MODERN MEDICINE IN CHINA.*

By W. H. DOBSON, M.D., (G. W. U., 1895),

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When one leaves the progressive little kingdom of Japan and crosses the Yellow Sea to that land of mists and myths, Far Cathay, it is to leave the nineteenth and twentieth centuries to step ashore in the dark ages. In no one department of knowledge is this more true than in medicine. The Chinese have no science or generally practiced principles of that art. We have here a country of at least two thousand years growth, with history and mechanical arts progressing from that period, but during the same time there has not been one step in the divine art of healing. However, it is not my intention to give you history, which may be found in any good library; I am sure it is your desire to hear of my personal experience as a physician during the eleven years since the cutting of the cord by our revered Alma Mater.

In the beginning it is but just to state that nearly all the modern medicine practiced to-day in China is by medical missionaries sent out as representatives of various religious bodies in America and Europe. There are a few hundreds of native graduates of schools opened by these medical missionaries. None of these native physicians undertake surgery beyond minor operations unless they are serving in missionary hospitals. Thus you see the labor of upholding the principles for which we stand devolves upon one or two hundred white men and women.

One word of ancient medicine and the native herb doctor. You have all heard of his formidable prescriptions of tiger's bones, bear's gall, deer's horn, lizards, etc. The more filthy they are, the better medicine. All are given because they are "good for" the disease. In my dealings with patients they disclose the quack's classification of diseases and remedies by inquiring whether the ailment is cold or fever. The native doctor needs no study, no examination or other qualification. He has often failed in other business and has taken up drugs as a last resort. Many of the governmental literary graduates dabble in medicine for pecuniary profit. Should the doctor have had ancestors who followed the same calling he will gain the greater confidence of his countrymen. Alas, this confidence is not due to any belief in heredity but because the son will probably be in possession of many prescription books of his progenitors. His fees vary from one hundred cash, or five cents, to a chicken or a horse. I have seen herb doctor and parent haggle over a fee while precious moments of life were ebbing from the child.

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Putting on a solemn and "never made a mistake" air he feels three pulses in each wrist. He thus examines the six regions of the body, and no questions or other examinations are necessary. Many apothecaries employ a doctor to sit in the shop and see patients who buy their nauseous compounds before going out.

I have gone to such a length to describe these doctors and their ways in order that you may in part imagine the difficulties which we encounter in examining ignorant and superstitious people accustomed to the native quack. Take for instance a woman's hand and wrist presented from behind a curtain for diagnosis of, and relief from, impacted shoulder at the vaginal outlet.

In our practice of medicine and surgery we must always remain pupils of those who have time for original research. The medical man connected with the mission work is overwhelmed with the mass of suffering humanity. Serious cases come thick and fast allowing no time for detailed study of the individual or his disease. To alleviate gross suffering so as to permit of but a fair degree of health is in many cases the limit to which treatment is carried. Cases cannot be followed up except where they return to the hospital. The territory of one physician extends to a circle of often two hundred miles diameter, within which there are no brother physicians to share burdens and join in consultation. There are no means of comparison nor educational centers to visit.

Many of the larger hospitals have schools for instruction in Western medicine. The government is now opening some medical colleges with Japanese instructors. There is no opportunity for practical anatomy or post mortem investigation because of superstitious reverence for the dead. Dissections of animals and dissections in the operating room at present supply anatomical knowledge.

Some hospitals are locally supported but the majority look to American and European benevolence. The missionary physician charges a nominal fee where the patient is not too poor.

Sanitary problems are complicated by omnipresent insects and filth. Green vegetables fertilized with human excrement carry intestinal parasites and bubonic plague. China is innocent of sewerage or water supply systems. Hogs and dogs act as public scavengers, while old women follow the hogs and dogs to pick up their droppings. Filthy surface water finds its way into the public wells. Heavy spring rains providentially remove accumulations of months of filthy deposits. In our southern country mosquito nets are a necessity.

The food supply is one of our greatest questions. The common laboring classes do well to receive one meal of rice a day. When such people come for directions to take their medicine they remind one of the Irishman who when told to take his medicine after meals replied, "I can't do that sor, I haven't got the meals." To prepare a patient with bad chronic cystitis for operation for stone, or a phthisical individual for his fight for life we order eggs and meats but find that they are only able to obtain sweet potatoes and salt fish drippings.

The Canton Hospital, the largest in China, receives annually 27,000 dispensary visits and there are over two thousand operations performed in that time. Since leaving that hospital I have one under my exclusive charge where we have forty beds and receive 6,000 dispensary visits, and perform over three hundred operations yearly. I believe our hospital practice will compare with that in America. Asepsis with careful preparatory and after treatment keep down the mortality. The majority of surgical cases are chronic weakened individuals, and the mortality is less than one per cent. From the immediate relief it affords surgery is the most telling factor in our practice. Many operations are miracles in the eyes of those people. They are prone to applaud the opening of a simple abscess and to pass without notice a nice dissection in the carotid triangle in extirpating diseased lymphatics.

Lack of medical skill and ignorant tampering cause disease to appear in more extended and chronic forms than here in America. The felon of the distal phalanx becomes a general abscess of the hand; a comminuted fracture is seen after the bones have reunited in deformity; ulcers often cover one-half of the leg; spleens enlarge until the entire abdomen presents a hard surface; ring-worms runs off into surrounding space with the exception of the points where the ring crosses hand or foot; fifty to seventy pound abdominal tumors are of common occurrence, and fatty tumors weigh down their victims with years of burden. Acute exanthemata, common in America, are seldom seen with the exception of measles and confluent smallpox. In their places we have cholera, plague, beriberi, leprosy, tetanus neonatorum.

We cannot specialize. A list of operations for one day may show cataract, perineal lithotomy, internal hemorrhoids, an enormous ovarian cyst, and a club foot.

A large share of our attention is engaged with eye diseases. Trachoma with its resulting disorders holds the first place. In our operations for entropium I have developed what is to me a new procedure. It consists of a long loop suture catching the upper edge of the tarsal cartilage, thus anchoring the palpebral margin high up. I also use the excised strip of skin to fill in the gap covering the tarsal cartilage. Simple cataract extraction is the operation of choice in all uncomplicated cases.

Next in frequency to operations on the eye come those for urinary calculi. We rarely see stones in the pelvis of the kidney. The average weight of calculi is about one ounce, though two or three ounce stones are of common occurrence. Median perineal section with the incision extended laterally around the anus is our operation of choice. I have removed several three ounce stones through the perineum. Most of the specimens are composed of sodium urates. Occasionally one of calcium urates is seen. About ten per cent of lithotomies are performed on children of from three to six years of age, while one per cent are upon females. In the case of a boy of eight years I removed a long stone of one ounce in weight which was firmly attached to the bladder wall posteriorly. The free end was pointed and plugged the urethral opening upon contraction of the bladder. Straining had caused an extrusion of the prostate and rectum outside of the anus.

Tuberculosis is general. Results of treatment similar to those in this country can be had where there is proper food and outdoor life. We have many cases of tubercular caries. I had one case where the entire head of the femur was found loose underneath the skin over the hip joint. For one case of caries of the seventh cervical I had to make a complete adjustable iron brace to support shoulders and head from the hips. Iron rods, etc., were purchased in native shops.

The alveolar process of the lower jaw is often destroyed as a result of long continued tooth abscesses. In one case I found a sequestrum of the whole aveolar process together with the anterior portion of the ramus and coronoid process entirely separate lying under the mucous membrane on the outer side of the right jaw. The teeth were all imbedded in a new jaw which seemed sound and serviceable. We are called upon to replace a great many dislocations of the lower mandible from excessive gaping.

Speaking of teeth reminds me that the native tooth extractor uses his fingers which have been educated from childhood to act as forceps. A trial demonstration of my skill as a dentist was sought by an old woman on one occasion. She was so surprised and pleased when a tooth was painlessly removed that she immediately requested me to pull ten more.

In concluding this paper I shall briefly refer to some cases which may be out of the common run.

Field laborers present chronic painful enlargement of the posterior portion of the os calcis. The disease, while slow, has acute exacerbations of pain so severe as to prevent walking. At first I attributed these swellings to chronic inflammation and calcification of the bursa beneath the tendo achillis. Other cases showed a distinct enlargement of the whole posterior portion of the bone. There are no pathological data from microscopical examination. Maxwell of Formosa in " Tropical Medicine " has written of his experiences with this malady. All systemic remedies, together with counter irritations, and hot air baths fail. He has suggested the only treatment which is to raise a button of bone forcing a quarter inch trephine through into the spongy portion. This in most cases relieves the pain immediately.

A boy of six years was presented with the history of having fallen out of bed two days before. The only abnormal conditions present were constipation and a tumor about twelve inches in length extending from the left iliac through the hypogastric region up to the vicinity of the gall bladder. The tumor had a fecal consistency and was painless. The diagnosis was intusseption of the small intestine up the ascending colon to the right hepatic region. The fact that there was no inflammation permitted an attempt at reduction by taxis. This was accomplished and the ileo-caecal valve returned to its normal position. Now careful palpation disclosed the presence of a ball of ascaris lumbricoides obstructing the valve, and portions of the worms were made out extending along the ileum. After about one-half hour of manipulation to disentangle the worms, a gurgle and an almost immediate request to defecate resulted in the appearance of several ascaris, and a large quantity of fecal matter. No other treatment was necessary. The interesting point of this case was the possibility of distinguishing the presence of the worms by external palpation. I should be interested to hear from any one having a similar case.

Within a few miles of our hospital there is a locality from whence come many cases of Hodgkins disease. We have excised and treated them in many ways but the only useful treatment is the early removal of adenoids from the nasopharynx, and relieving all chronic conditions in the nose. This seems to stop the symptoms in many cases where I am certain the disease would have developed if not so treated.

I have never seen but one case of appendicitis in a Chinese.

The native household treatment of certain disorders is often pathetic. Hung around a child's neck we find a portion of a goat's horn to cure infantile or goat's paralysis. The tender skin of an infant shows many scars of the actual cautery applied to relieve colic. I saw one case where the child had been in convulsions followed by coma. The treatment was to force it to cry. To do this the grandmother bit to the bone on either side of the tendo achillis on each foot.

At a case of post-partum hemorrhage the following sight met my eyes: A woman squatted over a tub. Her head was covered with red grease and ashes from several lighted candles and sticks of incense stuck in her knotted hair. Behind her and grasping her hair was the brother of her husband with a large knife in his hand. He was making passes with the knife and savagely yelling "Get out, get out." In the back ground stood an old neighbor with a drawn sword and a musket. They were trying to frighten away the evil spirit causing the flow of blood. After a deal of persuasion they permitted the woman to get on the bed when a dose of ergot together with a little manipulation contracted the uterus and all was serene.

STERILITY IN THE MALE, ITS CAUSES AND SURGICAL TREATMENT.*

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It is only in the past twenty-five years that the subject of sterility in men has been carefully studied and valuable conclusions deduced. In earlier years unfruitful marriages were always ascribed to the wife, who in many instances was subjected to needless gynecological operations and treatment. If a man seemed well developed sexually, and was able to copulate in a normal manner, and had what seemed normal ejaculations of semen, he was considered potent, and failure to have offspring was always attributed to some abnormal condition in the woman.

With the advance in genitourinary surgery the condition of the semen and seminal tracts has been carefully studied, with the result of proving that in a considerable number of cases, where copulation was effected and the appearance of the semen was normal on microscopical examination, the fluid was found lacking in spermatozoa or else these cells were nonmotile or degenerated. As a net result of many investigations it may be stated, in general, that in cases of unfruitful marriages the husband is the sterile member of the family in about one case in six.

According to Kehrer, the cause of childless marriages is now sought much oftener on the side of man than has heretofore been the custom. Kehrer, himself, gives the results in a series of 96 cases. In 3.12 per cent there existed inability to copulate. In these cases there had been a preceding history of excessive masturbation. The men suffered from frequent pollutions, or their ejaculations were premature, and the penis could not be inserted into the vagina. Kehrer claims that impregnation may occur if a speculum be inserted into the vagina before copulation, and in several cases results were obtained by this maneuver. In 21.31 per cent azoospermia, absence of spermatozoa, existed. In practically all of these cases there was a history of gonorrhea with unilateral or more often bilateral epididymitis. Azoospermia was also found where no disease of the sexual organs had occurred, and where nothing abnormal in the genital organs could be demonstrated. Oligospermia, paucity of spermatozoa, was demonstrated in 11.45 per cent. Here there was a history of gonorrhea with epididymitis, or syphilis. It will be seen from this series of 96 cases that 63 per cent of the sterile cases had a history of gonorrhea with infection of the epididymis and prostate.

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Noeggerath found 8 sterile marriages in a series of 14 to be the fault of the male. Gross in 192 cases found the male deficient in 18 per cent.

Sterility in the male is due (1) to aspermia, non-secretion of semen; (2) to azoospermia, where the semen does not contain spermatozoa; (3) to oligospermia, where the spermatozoa are few in number; (4) to conditions where the spermatozoa may be motionless or the motility be transient, or (5) to obstruction to the passage of semen to the urethra or seminal vesicles, and the escape of semen outside of the normal channels, as in cases of hypospadias and fistula. Men with double undescended testicles are almost invariably sterile; so, too, is this the case in those whose testicles have received serious injuries causing destruction of the secreting structure or traumatic occlusion of the efferent ducts. This latter is a condition which obtains in cases of epididymitis; the exudated lymph fails to be absorbed, and becomes transformed into contracting connective tissue, which results in an obliteration of the tubes of the epididymis. Furthermore, the mouths of the ejaculatory ducts may be occluded as a result of operation for stricture, stone, or prostatic conditions. In the cases of azoospermia, absence of spermatozoa, the ejaculated fluid will present all the physical properties of normal semen, as regards smell, consistency, and so forth. Where we have small calibered strictures, the fluid is either forced back into the bladder or retained in the urethra behind the point of constriction, until erection subsides, whence the fluid slowly dribbles out. A few cases have been recorded where none of the reasons cited would hold, but these have been explained by the belief that the semen was perverted in quality or deficient in quantity, through constitutional depression or cachexia. Here the microscope would repeatedly disclose a state of azoospermia or oligospermia with the few spermatozoa showing but feeble motion or else complete absence of motion. And after no course of treatment other than that for the cachexia we would eventually find the presence of the procreative bodies and soon hear of an impregnation. Then, too, we are forced to consider the theory of apparent lack of affinity of the one cell for the other; we see this demonstrated in cases of a childless first marriage being followed on both sides by marriages resulting in a large family for each member of the former union. We hear of the so-called physiological and psychological question with which the stock breeders have to contend at times, and which forces them to set aside a prized stallion of known abilities for one of inferior pedigree.

Next to gonorrheal infections, frequent masturbation and sexual excesses are the most frequent cause of sterility in the male. The prolonged and frequent overstimulation of the secreting structure of the testicles finally results in exhaustion of the organ, the spermatozoa being imperfectly formed, even though the quantity and quality of the fluid may be apparently normal. The virility of the spermatozoa is often in direct proportion to the general physical condition of the patient. The oftrepeated shocks to the nervous system, which occur especially in masturbators, who take advantage of the time and place which are always convenient for their purpose, lowers the general physical condition, producing constitutional depression and cachexia, and thus affecting the virility of the spermatozoa. I have seen several of these cases perfectly cured by leading a hygienic sexual life.

In bilateral syphilitic and tuberculous disease, a considerable proportion are sterile on account of the destruction of the epididymis in tuberculosis, and the destruction of the testicle itself in syphilis. Another cause existing in this modern age is the X-ray. Workers in X-ray laboratories and physicians doing this work are the ones affected. One prolonged exposure has been known to cause sterility lasting three months. At first the spermatozoa are dead, and later disappear altogether. I know of seven workers in an X-ray laboratory in New York who have been sterile for over a year. I do not believe that any permanent cases have been reported from this cause. It is too early yet to say. One worker of my acquaintance was sterile for some months, but after keeping out of the rays for three months this defect disappeared and his wife became pregnant. When inflammation has attacked the greater portion of the prostate, so as to block up the ejaculatory ducts, after an orgasm there may be two or three viscid drops escape that contain principally pus cells and degenerated prostatic cells, but no spermatozoa. In other cases there may be so much pus present in the prostatic and vesicular secretions as to cause the death of the spermatozoa when they come into contact with this element of the fluid. The diagnosis of this condition should be made on microscopical examination by finding pus and dead spermatozoa in the fluid obtained by massage of the prostate and seminal vesicles.

I have seen several cases where the spermatoza were nonmotile that were cured by treatment of the prostatic condition, and in one case so much pus was present that part of the prostate was excised (care being taken not to injure the ejaculatory ducts) ; the pus disappeared and the spermatozoa regained their motility. The term false aspermia or malemission is sometimes employed to designate that condition in which normal semen is discharged into the urethra, but does not reach the meatus, flowing back into the bladder to be discharged drop by drop from the urethra after completion of coitus. This is commonly due to stricture, the caliber of which may be great enough not to interfere with micturition, when the circulation of the penis is unimpaired, but when the intense congestion incident to erection takes place, the caliber of the urethra is so reduced that no semen escapes.

The following case shows this very admirably: J. H. W. came to my office in September, stating that he had gonorrhea eight years before and an internal urethrotomy three years later; following the operation patient nearly bled to death, as he is a hemophiliac. He had had double epididymitis six years previous, and when I first saw this case I thought it a case of sterility due to epididymitis. The patient collected semen in a condom; the amount obtained was very small and proved on microscopical examination to be nothing but mucus. He had not complained of difficulty in urination, but on examination a No. 12 French bougie was the largest instrument that could be passed. After gradual dilatation the fluid ejaculated during intercourse appeared normal in amount.

As I have heretofore mentioned, the principal cause of sterility in men is bilateral gonorrheal epididymitis. Benzler in the *Archives of Dermatology and Syphilis* in 1898, in looking up the history of old soldiers who had gonorrhea while in the German army, found that among those who had been married three or more years 10.5 per cent who had suffered from gonorrhea without epididymitis were childless; these were probably the cases with chronic prostatitis and seminal vesiculitis; 23.4 per cent of those having unilateral epididymitis, and 41.7 per cent of those having bilateral epididymitis, were childless. It will be seen from all statistics that epididymitis is by far the most common cause of sterility, and it is most common in the cases where both sides were involved, almost 50 per cent being sterile. Statistics show that traumatic epididymitis, unless very severe, rarely leads to sterility. Orchitis probably never occurs in gonorrheal infections. I say this from results in twelve cases that I have operated upon, with acute epididymitis of the severe type, in none of which was the testicle itself involved.

In epididymitis it is well known that the globus minor is the portion of the epididymis most involved, and it is in this very portion that occlusion has the most dangerous results, as there is here but one efferent duct, while in the globus major the efferent ducts are numerous, and the obstruction of one or two would still leave open other channels. It was because of the known patulency of the globus major following gonorrheal epididymitis, when the globus minor and vas deferens in this region became occluded, that the operation of anastomosis of the vas deferens and the globus major was considered. The prognosis for the return of spermatozoa in these cases, unless operated upon, is positively hopeless.

Dr. Quinby of Boston has done some experimental work on guinea-pigs. He tied off the vas deferens at its exit from the globus minor, and then made an anastomosis between the globus major and the vas above the ligation, in the method recommended by Dr. Martin of Philadelphia (which is described later). Instead of using fine silver wire, very fine silk was employed.

In from 10 to 27 days three out of four of the pigs thus operated upon showed spermatozoa in the fluid ejaculated by means of electrical stimulation.

Two cases of sterility (following double gonorrheal epididymitis) under my care came to operation, one at the hands of Dr. Martin of Philadelphia, the other my own. In both instances Dr. Martin's method of procedure was employed, which I will describe. An incision is made through the skin and coverings of the epididymis, which is approached from the outer side so as not to wound the spermatic artery. The artery of the vas is pushed aside and a one-half-inch incision is made in the vas deferens on the level with the globus major, along its axis, care being taken to get into the lumen of the tube. A portion of the globus major is picked up between two fine forceps and an elliptical piece removed to correspond with the incision in the vas deferens. An examination of the fluid obtained by squeezing the globus major will show spermatozoa. Four fine silver wire sutures on curved intestinal needles are inserted, one at the upper angle of the wound joining the vas and the cut surface of the epididymis, one at the lower angle, one at the outer, and one at the inner side. When these are drawn out a perfect little pocket is formed by the spreading out of the cut vas deferens, and the elliptically cut globus major. The wound is then closed and dressed. It will be seen that the operation is not one of grave danger to life. It is one in which the existing condition cannot be made worse, but where, in fact, everything is to be gained and nothing to be lost. The first case was one referred to me by Dr. Wellington. The patient was a robust appearing man of thirty-eight, who had been married several years. His wife had been examined and no cause for sterility ascertained. He had had gonorrhea with double epididymitis some years before. Frequent examinations of the spermatic fluid showed no spermatozoa, but the fluid obtained was loaded with pus. The prostate and seminal vesicles had been the seat of chronic inflammation. The patient was operated upon by Dr. Martin, and the examinations after operation revealed live spermatozoa. This patient's wife has not given birth to a child, but has possibly succeeded in having a miscarriage.

T. D., twenty-nine years old, was first seen by me in February, 1905, being referred to me by Dr. Wall. The patient was a robust, healthy man of 235 pounds; he had had gonorrhea two years before and a double epididymitis three weeks later. There were numerous shreds in both urines. Examination revealed a large soft prostate and markedly enlarged soft vesicles; the fluid expressed by massage showed numerous pus cells. Patient was treated for six months, by which time the shreds had disappeared and the prostatic and vesicular fluid was free of pus. He was then married, and returned in about six months, complaining because his wife had not become pregnant. Dr. Thomas Kelley had been attending the wife, and said she was normal in every way. Examination of his semen showed no spermatozoa. It was thought possible that the absence of spermatozoa was due to frequent coitus. He abstained from coitus for two weeks and the semen still failed to show spermatozoa. He was kept under observation for two months, and repeated examinations proved the absence of cells that could possibly have been spermatozoa. He was advised, and consented to undergo an operation for anastomosis of the vas deferens and epididymis as his only chance for improvement. This was done one year ago at Garfield Hospital; recovery was uninterrupted, and he left the hospital in one week. Examination in one week showed no spermatozoa, but another examination a month after operation disclosed their presence in numbers. An examination of the semen on April 10, 1907, over a year after operation, showed the fluid filled with actively motile spermatozoa. So far no pregnancy has resulted in this case, but I continue to hope. Very few of these operations have been reported.

Dr. Martin has recently reported seven cases, four cases where spermatozoa appeared after operation, two cases not heard from, and one failure. One patient included in the four successful cases is the father of a healthy child. In some of Dr. Martin's cases the spermatozoa did not appear at once after operation, and in my case the spermatozoa did not appear until nearly a month. I believe this is accounted for by the slight inflammatory reaction following the operation causing occlusion of the vas deferens which disappears as the inflammatory exudate is taken up, thus allowing the vas and the ducts of the globus major to become patulous.

We know that after this operation in the majority of cases spermatozoa return to the fluid, and there seems no reason why fecundation should not take place. I might do well to quote Dr. Quinby's ending to his paper. The three main facts for employing this operation are: (1) The condition cannot possibly be made worse by operation; (2) there is double chance for success, as patency on one side is sufficient; (3) the operation has been found feasible.

THE PHILOSOPHICAL FOUNDATIONS OF CHARLATANRY IN MEDICINE.*

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It is not the object of this paper to endeavor to point out how the human race has gradually passed from those phases of intellectual development where it contemplated with craven fear the "signs and wonders" in the skies to the appreciation of the beauty and majesty of law in the heavens; or from the "Prince of the Power of the Air" to meteorology; or from magic and all of the black arts to physics and chemistry; or from the miracles of the Middle Ages to modern medicine; from fetichism to hygiene; from demoniacal possession to insanity; from diabolism to hysteria; or from legendary history and folklore to comparative mythology. In short, the object of this paper is not to epitomize the history or the evolution of modern medicine. Neither is it the object of this paper to indicate the history of the conflict of superstition with modern medicine, for we had a very interesting paper of this kind from Dr. James Dudley Morgan last December. Rather it is the object of this paper to attempt to indicate the reasons for the existence of so many aberrations in medical beliefs and medical practices on the part of the public at large.

All educated and experienced physicians are aware of the fact of the extensive prevalence of charlatanry throughout the history of human culture and at the present time; they also are aware of the fact that the patrons and dupes of what educated physicians call charlatanry are not confined to any class of men or women. Men and women of the highest culture and refinement, as well as ignorant persons, are among the partisans and the disciples of many vagaries in medicine.

It has, therefore, seemed to the writer that it might prove interesting as well as instructive to devote some thirty-five minutes to an endeavor to seek out some of the underlying principles of successful charlatanry.

Probably quite a number of factors could be mentioned as helping to constitute the philosophical foundations of charlatanry in modern medicine. But at least five factors stand forth as elements of stupendous power in cultivating and maintaining such an extensive field of charlatanry as may be witnessed in any modern state, whether civilized, barbarian or savage. These factors are: (1) Human suggestibility; (2) reasoning by analogy in modern people; (3) reversions to primitive methods of philosophizing (mostly analogical reasoning); (4) the assumption that ideal associations have corresponding material connections (mostly analogical reasoning); (5) morbid imagination.

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* Extracts from the annual address as President of the Medical Society of the District of Columbia, given Dec. 18, 1907.

These five factors are easily reducible to three, viz: *suggestion, reasoning by analogy,* and *morbid imagination. . . .*

The concomitance of ideation and cerebration is a fact of overwhelming importance in the study of the mental activities of mankind. It thrusts itself upon the attention of the thoughtful psychologist and biologist.

It constitutes the scientific and philosophical basis of that factor of supreme importance in the beliefs and conduct of the human race, viz: of human suggestibility.

Suggestion and persuasion are practically identical in that they both inculcate ideas, the former appealing to blind faith, and the latter to logical, clear and critical reason. Bechterew has cleverly written that logical persuasion enters the understanding by knocking at the front door, while suggestion enters by the back stairs. Dubois has estimated that only three per cent of the human race are free from the slavery of suggestion. He goes on to say that human suggestibility is incommensurable. It enters into every act of life, colors all our sensations with the most varied tints, leads our judgment astray and creates illusions in spite of our reasoning faculty. As soon as we leave the firm ground of mathematical reasoning we experience an incredible difficulty in resisting suggestion. When we form an opinion it is very rare that logic is the only cause. Esteem, affection, our secret desires and feelings, the charm of language, the tyranny of words, all mingle with the cold current of logic and lead us into error.

Ideas are so powerful that not only can they modify or distort a preexisting idea or sensation, but they can create sensations in their entirety. There are thousands of persons who, the moment they have read about or heard described a group of symptoms, immediately feel those symptoms. Certain persons experience a sensation of touching oil and the smell of petroleum in taking up a lamp which has never held any oil. The wine which is poured out of a dusty bottle bearing the label of a celebrated vineyard always seems better than it really is. The majority of persons feel various sensations in touching the pole of an electric apparatus when it furnishes neither currents nor discharges.

The credulity of the multitude finds its justification in human suggestibility. The suggestions of charlatans, whether verbal or in printed circulars, or in newspaper advertisements, constitute a very extensive and immensely fertile field for disseminating broadcast errors and superstitions in all matters pertaining to medicine. It was due to suggestion or psycotherapy that so many cures were made in the Middle Ages by pilgrimages to the tombs of saints, by holy waters, and by being in the presence, or by touching the relics, of saints. It is due to the overpowering sway of suggestion that so much is accomplished in modern times by christian science (a parody upon Christianity), by osteopathy, by patent medicines, and the like. . . . .

It is sad to relate that physicians themselves are too often to blame for the undue sway of suggestion in medical affairs, and that charlatans and places of pilgrimage profit by the mistakes of physicians. Physicians too often declare that a disease is incurable. They make erroneous diagnoses or fail to accomplish any good, and too often forget the influence which the mind exercises over the functions of the viscera. They forget that when the desires of the sick and those who are suffering harmonize with the suggestions of charlatanry, then is a golden opportunity for wonder-workers of all kinds.

When, added to the above considerations, charlatans come in contact with invalids who have mental defects or a characteristic lack of logic, then does suggestion have all the firmer sway. When the mind is not critical and logical, or when, though critical and logical, it is not versed in at least the elements of medical knowledge and medical history; when it knows nothing of the history of charlatanry, and of the potency of suggestion; when, in addition to these factors, considerations of economy or parsimony are present, then, no matter how great the attainments of this mind may be in other fields of culture or human endeavor, this mind may at any time become the patron or the dupe of the grossest vagaries in medicine or charlatanry.

Now let us turn from human suggestibility to human reasoning by analogy. The clever Lord Chesterfield relates, in one of his charming letters, that the English King had been ill, and that people generally expected the illness to be fatal, because the oldest lion in the Tower, about the king's age, had just died. And then he exclaimed in his letter, by way of comment, " So wild and capricious is the human mind." But Tylor, in his fascinating work on " Primitive Culture," says that the thought was neither wild nor capricious, but was simply such an argument from *analogy* as the educated world has at length painfully learned to be worthless; but which, it is not too much to declare, would to this day carry considerable weight to the minds of four-fifths of the human race.

On this principle it is easy to understand how the art of taking omens from meeting and seeing animals, and therefore how augury originated. It is perfectly clear why the omen of the vulture should mean rapacity; why flies, returning however often they are driven off, should be the signs of impudence and importunity, while bees, types of an obedient and industrious community, should be the omen of luck to a king. It is still plain to us why there should be a foreboding of ill from the owl's doleful note, and the suggestion of victory from the fierce swooping hawk, a thought which, in medieval Europe, made the bird of prey the warrior's omen of conquest.

The modern German peasant who says that meeting a flock of sheep is lucky, but a herd of swine unlucky, and the Cornish miner who turns aside in horror on meeting a rabbit or an old woman on his way to the pit's mouth, are illustrations of survivals in culture, and are to this day keeping up relics of primitive culture as genuine as any flint implement dug out of a tumulus. The art of taking omens from dreams is explained by the same principle.

Man, having learned to associate in thought those things which experience revealed as connected in fact, has often proceeded erroneously by reasoning from analogy to invert this process, and to assume that association of ideas must involve analogous associations in reality. In the hands of the trained and skilled observer and experimenter this process is invaluable and is called the scientific use of the imagination. It enabled Leverrier and Adams, independently, to predict the existence and the discovery of the planet Neptune before it was known to exist. But in the hands of any but rigidly trained thinkers, checked and balanced by rigid rules of evidence, the process leads to the wildest vagaries. This is not only true of man in his primitive culture, but also of men of the highest culture in the Middle Ages, and of many modern men, ignorant and educated alike.

By a vast mass of evidence from savage, barbaric and civilized life, magic arts which have resulted from thus mistaking an ideal for a real connection may be clearly traced from the lower culture where they originate to the higher culture in which they are survivals. Such are the practices through which a distant person is to be affected by acting on something closely associated with him, as his property, clothes he has worn, and especially all cuttings of his nails and hair. Not only do savages, high and low, live in deadly terror of this witchcraft, but even European folklore preserves this primitive reasoning, and the modern German peasant, during the days intervening between his child's birth and baptism, is unwilling to lend anything out of his home, lest witchcraft should be worked through it on the unconsecrated baby.

When we hear of North American Indians making images of their foes, whose lives they expect to shorten by piercing these images with their arrows, we should remember that these savage people have their representatives among us moderns in the Devonshire peasant of England, who hangs in his chimney a pig's heart stuck all over with thorn-prickles, so that the heart of his enemy may likewise be pierced.

There is no better subject matter through which to trace the history of the laws of the mind and to study, therefore, the processes of the imagination and of analogical reasoning, than the well-marked incidents of mythical history; for these incidents range through every known period of civilization, and through all the physically varied tribes of mankind.

The rough nature-myths of savages are the expression of the lessons they have learned from their child-like contemplation of the universe. They are at once the science, the philosophy and the region of primitive man. The anthropologist traces these rude nature-interpretations up into times when they were molded into complex systems of mythology, stiff and monstrous in Mexico, distorted into bombastic exaggeration in the Asia of Buddha, but gracefully artistic in classic Greece. He can observe how the mythology of ancient Greece and Rome, once so true to nature, came to be considered as allegory and was then degraded into sham history. Finally, in our modern civilization, we find that relics of the structures which were reared with such strength and skill by the primitive observers of nature, or the myth-makers, must now be sought in vulgar superstitions, in scraps of nursery folklore, in old dying legends, in fragments of old ideas which still hold an inherited rank gained in past ages of intellectual history, and, finally, in thoughts and allusions carried on from ancient days by the perennial stream of poetry and romance.

The stupendous results that have been achieved by reasoning from analogy can be briefly though profitably illustrated by noting primitive man's mental attitude towards the striking phenomena of the heavens, chiefly in sunrise and sunset, cloud and storm, in meteors, comets and constellations, and the like.

We moderns pride ourselves upon our coldly prosaic and rational temper towards natural phenomena. We have come to believe that all events are taking place regularly in strict conformity to law. But primitive man knew nothing about physical forces, nothing about the laws of nature, nothing about the necessary regularity of things.

Where the activities of the human mind, whether primitive or modern, are not headed off and checked in various directions by established and rigid rules of experience, this same human mind can develop an unlimited capacity for believing and fancying. The fact that the ancient inhabitants of India regarded the rain clouds as cows with full udders milked by the winds of heaven, is not one whit less incomprehensible than many beliefs that have been entertained by many medieval and modern men.

The sole measure of things that primitive man possessed was himself; consequently he made the natural deduction (based upon reasoning by analogy) that everything that moved or had power of movement, did so because it was alive. A personal will and life was attributed to night and day, to waterfall and whirlpool, and in a thousand different forms this conception was expressed. The thunder was the roar of a mighty beast; the lightning a serpent darting at its prey. The modern conception of the phenomena accompanying the revolution of the earth upon its axis in twenty-four hours, was explained by early man as the swallowing up and casting forth of Day by Night. Night was commonly personified as a huge wolf.

This scientific explanation of day and night by primitive man we now designate a myth, whether it has evolved, in the course of ages, into the legend of Tom Thumb, who was swallowed by the cow and came out unhurt, or the pretty story of little Red Riding Hood. This story is mutilated in the English version, but is known more perfectly by old wives in Germany, who can tell that the lovely little maid in her shining red satin cloak was swallowed with her grandmother by the wolf, till they both came out safe and sound when the hunter cut open the sleeping beast.

The primitive man's conception of the ultimate victory of the personified Sun with his unerring rays over the demons of frost and snow in Winter, has given rise to the conception of infallible skill in archery, which underlies such a great variety of popular fairy tales. The story of William Tell is the last reflection of the beneficent divinity of Summer.

Again, throughout the whole of Indo-European mythology the souls of the dead are supposed to ride on the night-wind, with their howling dogs, gathering into their throng the souls of those just dying as they pass by their houses. Hence, when a person dies it is still customary, in many parts of Europe, to open the windows so that the soul may easily join the mystic cavalcade. The howling dog, whose appearance under the windows of a sick person is such an alarming portent to some persons, is but the modern echo of the wish-hound of Hermes, or, in other words, the tempest or howling wind personified as a great dog or wolf by early man. To this day, as the gale sweeps past their cottage doors the English peasants believe they hear the wail of the spirits of unbaptized children. In Persia and India, when a person is dying a dog is brought to the bedside in order that the departing soul may be sure of a prompt escort. In classic Greece we have the fleet greyhound of Hermes come to escort the soul to the river Styx.

So it is with so many popular stories such as that of Hercules, Odin, Cinderella, the Sleeping Beauty, etc.; they are the offspring of nature-myths, the result of primitive man's attempt to explain the phenomena of nature by reasoning from analogy.

Primitive man universally believed that the soul can temporarily quit the body during lifetime. It was the only way he could explain the phenomena of dreams.

Then away down the current of time, in the Middle Ages, the phenomena of catalepsy and trance were cited in proof of the theory that the soul can leave the body and afterwards return to it. Further, the intensely realistic mind of antiquity arrived at the notion that the souls of men could enter into the bodies of beasts, and also into inert objects, as stones, idols, pools, and the like.

These pagan theories, however, did not acquire their most horrible features until they came in contact with and were modified by the theology of the Middle Ages. Then witchcraft blossomed forth and continued even into our period of colonial history. A theory which, it has been estimated, resulted in the burning alive of nine millions of human beings.

One phase of it was the development of the dreadful theory, or, as we call it now, the superstition of werewolves; the superstition that with the aid of demons human beings could leave their material bodies reposing in sleep peacefully at home, while their souls were in the bodies of wolves preying upon cattle, children, women and men. This superstition, originated and intensified through reasoning by analogy, was apparently confirmed by many singular phenomena. It is known that in comparatively civilized countries, there have been cases of monstrous homicidal insanity. Going a step further, we find the propensity to murder has been accompanied by cannibalism. There have been a great many cases in which the homicidal and cannibal craving has been accompanied by hallucinations. Many of the insane cannibals described by Mr. Baring-Gould thoroughly believed themselves to have been transformed into wolves or other wild animals. Even in our own day the idea has not entirely died out of the French peasant's mind. A little over thirty years ago Mr. Baring-Gould was unable to persuade a peasant to guide him across a wild place after dark, because it was haunted by a werewolf. The theory of werewolves was the attempt of the cultured people of the Middle Ages to explain the obscure phenomena of insanity.

When, in those times, a person fell in a fit they shouted, "He's struck with a fairy dart," whereas we exclaim, "epilepsy."

Our modern word nightmare is the survival of a medieval theory of a female demon who sits upon one's bosom and hinders respiration. We moderns may say "indigestion," but they exclaimed "night demon," or Night Mare.

The relation of morbid imagination to myth, combined with crude reasoning by analogy, is illustrated not only in the terrible theory of werewolves, but in the well-known disease called by the English name of shingles, from the Latin word *Cingulum,* a girdle. This well-known irritating herpetic disease tends to encircle the body as with a girdle. Tylor says that, by an imagination not difficult to understand, this disease is attributed to a sort of coiling snake; and that he remembered a case in Cornwall where a girl's family waited in great fear to see if the creature would stretch all around her, the belief being that if the snake's head and tail met, the patient would die.

That primitive philosophy of nature in which all forces objectively existing are conceived as identical with the force subjectively known as volition, is interestingly illustrated in the superstition that harm is sure to come to him who saves the life of a drowning man. This superstition is a survival in culture. In the older form of the belief it is held that the rescurer will sooner or later be drowned himself; and thereby we pass to the fetichistic interpretation of drowning as the seizing of the unfortunate person by the water-spirit, who is naturally angry at being deprived of his victim, and henceforth bears a special grudge against the bold mortal who has thus dared to frustrate him. Again, it is still believed by some venerable granny that it is wicked to kill robins. At an earlier date the superstition assumes the shape of a belief that the killing of a robin portends some calamity; in a still earlier form the calamity is specified as death; and again, still earlier, as death by lightning. Another step backward reveals that the dread sanctity of the robin is owing to the fact that he is the bird of Thor, the lightning god; and finally we reach that primitive stage of philosophizing in which the lightning is explained as a red bird dropping from its beak a worm with the power to cleave even rocks.

Centuries ago, the Portuguese in West Africa, noticing the veneration paid by the negroes to certain objects, such as plants, pebbles, idols, claws of beasts, etc., very fairly compared these objects to the talismans and amulets with which they were themselves familiar, and called them *feitico* (meaning a charm), whence we get our English word fetich. Fetichism was universal in the primeval world. These primitive philosophers, reasoning with reckless analogy, believed that all sorts of spirits could reside in these objects—the kindly, helping spirits of powerful ancestors, as well as those of enemies. They were exorcised or appealed to, therefore, in multitudes of ways.

Referring to fetiches, Pliny informs us how pains in the stomach may be cured by transmitting the ailment from the patient's body into a puppy or duck, which will probably die of it. After the birth of a Chinese baby, its father's trousers, used as a fetich, are hung in the room upside down, so that all evil influences may enter into them instead of into the child. Modern folklore still cherishes such ideas. Although the terrible "black witchcraft" has died out from modern civilization, anthropologists may still study in the "white witchcraft" of modern European peasants the arts of curing a man's fever or headache by transferring it into a bird, or a crawfish, or of getting rid of ague or warts or gout by giving them to a willow, fir or ash tree with suitable charms. In England, warts may be touched each with a pebble, and the pebble in a bag left on the road to church, to give up their ailments to the unlucky finder; in Germany a plaster from a sore may be left at a crossway to transfer the disease to a passer-by. In Thuringia it is considered that a string of rowan-berries, a rag, or any small article, touched by a sick person and then hung on a bush beside some forest path, imparts the malady to any person who may touch this article in passing, and frees the sick person from the disease. It is stated on medical authority that the bunches of flowers which children offer to travelers in Southern Europe are sometimes intended for the ungracious purpose of sending some disease away from their homes.

Apart from the wretched selfishness and immorality of such practices, do they not help to furnish an insight into the human mind? Do they not prove, along with much that has been said in this paper, that there are inherited tendencies, and that there may be atavisms tucked away in the recesses of the average human mind, that may, under certain circumstances, render them susceptible to almost any kind of vagaries, and therefore to vagaries and charlatanry in medicine? The circumstances may be ignorance, wasting diseases that impair the better faculties of the mind, a poor mental inheritance, an unpropitious environment, or, as I have already intimated, reversions to primitive methods of philosophizing.

Can one detect any great difference between the personifications of the forces of nature by primitive men and the views of nature held by the most learned persons in the fifteenth, sixteenth and seventeenth centuries throughout Christendom? Catholics and Protestants alike believe that there was diabolical agency in storms, pestilence, insanity, and in fact in all disease. Martin Luther supported the theory most zealously, frequently asserting his belief that the winds themselves were only good or evil spirits. Moreover, we find Luther deliberately asserting that a stone thrown into a certain pond in his native region would cause a dreadful storm because of the devils kept prisoners there. The childish remedies employed against diabolical agency in the air and against pestilence were exorcism, fetiches of various sorts, ringing of church bells, parades carrying saints' relics, etc.

But have we not with us in modern times large numbers of persons wearing "electric" belts and "magic" foot-pads in the same fetichistic frame of mind?

In our own time West Africa is still a world of fetiches. The traveller finds them on every path, at every ford, on every housedoor; they hang as amulets around every man's neck, they guard against sickness or inflict it if neglected, they bring rain, they fill the sea with fishes willing to swim into the fisherman's net, they catch and punish thieves, they give their owner a bold heart and confound his enemies; there is nothing that the fetich cannot do or undo, if it be but the right fetich. On the theory of inherited fetichistic instincts the usefulness of the placebo in medicine and the success of patent medicines may be due at times to something other than the power of suggestion.

Thus the one-sided logic of the barbarian, based upon careless reasoning by analogy, making the most of all things that coincide with his primitive philosophy, and glossing over all that fails, has shaped a universal fetich-philosophy of the events of life. So strong is the pervading influence, that the European in Africa is apt to catch it from the negro, and himself, as the saying is, "become black." Thus, even to this day some traveller, watching a white companion asleep, may catch a glimpse of some claw or bone or such-like sorcerer's trash secretly fastened around his neck.

Modern European life shows well-marked traces of the ancient science and philosophy of spirits or mysterious influences inhabiting objects. The Tyrolese object to using grass for toothpicks because of the demons that may have taken up their abode in the straws. The Bulgarians hold it a great sin not to fumigate the flour when it is brought from the mill (particularly if the mill be kept by a Turk) in order to prevent the devil from entering into it. Amulets are still carried in the most civilized countries of the world by the ignorant and superstitious, with real savage faith in their mysterious virtues, and by some enlightened person in what seems to be more than a quaint survival from the past. Certainly in all these persons who are found in modern life, and wherever found, we have the intellectual foundation for the reception and the encouragement of all sorts of aberrations in medical practice and medical belief. It is the writer's deliberate conviction that multitudes of worthless proprietary medicines and mechanisms, that are sold throughout the civilized world, would go out of existence were it not for the fetichistic taint that survives in so many persons' minds. The stupendous sales of so much worthless trash in the name of medicine cannot be accounted for on the grounds of mere ignorance. For where is education more generally diffused than in the United States? And where do quackery and charlatanry in medicine find a greater paradise?

Nor could the tremendous force of *suggestion,* as met with in the innumerable advertisements in newspapers and printed circulars, accomplish so much harm as they undoubtedly do, were it not for that bias in so many minds that has its foundation in the depths of primeval philosophy.

Let us glance for a moment at fetichism in high places and among the educated in medieval and modern times. You can go to the cathedral at Cologne, Germany, and observe the relics of saints there which are believed to have healing properties, or you can study the faith cures of Boston, or Old Orchard in this country. You can investigate the efficacy of the royal touch in sundry diseases, commencing with

Edward the Confessor, in the eleventh century, and come down from reign to reign until you arrive at Charles I of England, who enjoyed the same power, in spite of the public declaration against its reality by Parliament. In one case this king saw a patient in the crowd, too far off to be touched, and simply said, "God bless thee and grant thee thy desire"; whereupon the blotches and humors disappeared from the patient's body and appeared in the bottle of medicine which he held in his hand; at least so says Dr. John Nicholas, Warden of Winchester College, who declared of his own knowledge that every word of it was true, which only goes to prove how easy it is to get some good and well-educated persons to believe in the most absurd fetiches and fictions in medicine—characteristics of the human mind which permit the charlatans to grow as the green bay tree. But Lord Bacon himself has said that "Imagination is next of kin to miracle—a working faith." So great fetichistic powers were attributed to King James II of England that we find a pauper at Portsmouth, New Hampshire, in colonial times, petitioning the General Assembly to enable him to make the voyage to England in order that he might be healed by the royal touch.

In conclusion, how can the public be safeguarded against evil suggestions in medicine, against reasoning by analogy about medical subjects in normal moderns, and against reversions to primitive methods of philosophizing when dealing with accidents and disease? The writer must confess that he sees no way whatever to prevent mental atavisms any more than physical ones. Reasoning by analogy can be curtailed, probably by education, especially an adequate education in the elements of the physical sciences, mathematics and logic. Several of the best remedies against the evils of suggestion are systematic attempts in the private and public schools and the colleges throughout the country to inculcate a spirit of rational skepticism, not only towards extravagant and irresponsible claims in medical affairs, especially in printed circulars, magazines and the religious and daily papers, but also towards extravagant and unverified claims in any field of knowledge or venture. Another important antidote to suggestion is a systematic series of public lectures in the schools and colleges by entertaining talkers giving an elementary presentation of the main features of the history of medicine, and especially of the history of charlatanry. Another most important aid is to uphold and encourage such papers as the *Ladies' Home Journal* and *Collier's Weekly.*

But the writer must confess that no matter how brilliant the conquests of medicine in the future may be, no matter how careful and considerate and well informed physicians may become, and no matter how much logic and mathematics and medical lectures are given to the public, the charlatans and their dupes, like the poor, will always be with us.

ABSTRACTS AND REPORTS.

I. DIET IN TYPHOID FEVER. (FISKE FUND PRIZE ESSAY, 1907.)

This paper is an effort to work out the theoretical basis and the proper practice of feeding in typhoid fever. In it is developed and presented the view that the dietetic regimen now prevalent for typhoid-fever patients is needlessly and harmfully restricted, that the objections to and fancied dangers of a mixed diet are groundless and mythical, and that these patients should receive a more generous and more varied diet than is now allowed.

The history of feeding fever patients is reviewed, for the purpose of showing that the fear of soft and solid food in fever is a surviving vestige of the antiphlogistic doctrines of the medieval period; and also to show the empirical way in which the present methods have developed.

From a consideration of the data afforded by published metabolism studies in typhoid fever the essential nutritive requirements of an adequate diet for this disease are tentatively fixed at about 100 grams of proteid and 1800 calories of total energy daily for a medium-sized subject.

The data available as to the digestive powers during typhoid fever are then discussed, from which it appears that the digestion of proteids and fats during the febrile period is reduced only 5 to 10 per cent from the normal, a reduction far less than has been generally supposed, on the basis of vague impressions and dogmatic assumptions, to be the case. This degree of digestive power is amply sufficient to enable the patients to assimilate a generous amount of food.

The various possible injurious effects of improper feeding in this disease are discussed, as with reference to the production of gastric and intestinal indigestion, aggravation of the ulcerated conditions, the effect of diet on the temperature, and its relation to relapses and coagulation of the blood. A comparison of the customary diet with the dietary advocated is made with regard to these points, and reasons are presented for the claim that as much harm, and even more, can be brought about by the improper use of milk and soup as by any other food.

The availability of the various food articles for typhoid feeding is discussed and an ample and varied diet list presented, including milk, eggs, puddings, meats and similar articles, from which selection can be advantageously made.

The results and statistics of the actual employment of the generous and varied diet by clinicians in all parts of the world are presented, showing the safety and advantages of its use, in contributing to the comfort and contentment of the patients, in shortening the period of convalescence, and above all in maintaining the patients' strength and resisting power at a maximum so as apparently to be capable of effecting a distinct lowering of the death rate from the disease.

John Benjamin Nichols, M.D.

II. A NEW METHOD OF PERFORMING ARTIFICIAL RESPIRATION ESPECIALLY APPLICABLE IN CASES OF DROWNING.[1]

The importance of prompt aid in cases of asphyxia from any cause or causes cannot be overestimated, and any new or improved method for bringing back to life these individuals should have a careful trying out and should be exclusively employed for this purpose if it be found to have distinct advantages over the older methods. It is the purpose in this paper to describe a method that has recently been devised by Professor E. A. Schäfer, of Edinburgh, which from the description and demonstration on normal subjects appears to have many advantages over the older methods.

In the case of a drowned person, immediately after being taken from the water, the patient is placed prone on the ground. The head is allowed to fall forwards and somewhat sideways. The mouth is open and the tongue naturally protrudes from the mouth. No manipulation of the tongue is necessary. The operator kneels by the side of or across the buttocks of the patient, places his hands flat upon the back over the lowest ribs and with the weight of his body presses firmly and gradually so as to expel the contents of the lungs. On relieving the pressure, which is done by the operator slowly swinging his body up without removing the hands from the back, the chest of the patient resumes its former dimensions and fresh air is drawn into the lungs. The alternate pressure and relief is repeated about once every five seconds, not oftener. The amount of air that can be introduced into the lungs in this way, by the pressure transmitted to the chest and abdomen and then by the release, is never less than 500 c.c., and may attain 1000 c.c. or more each respiration. By repeating the movements twelve times a minute an air exchange of from 6000 to 12000 c.c. can readily be effected. This is more than enough to maintain efficient respiration. On the passive living subject Professor Schäfer demonstrated this at the meeting of the International Physiological Congress, and it is easy for anyone to prove by the use of a proper face mask and spirometer. Professor Schäfer strongly urges that the movements of pressure be made slowly, and *not more often* than once in five seconds. Ten movements a minute will be ample for all purposes.

The usual method employed for resuscitation, that of Howard, is not so good as the method advocated by Schäfer and it has the following disadvantages. (A) With the patient lying on the back the tongue tends to fall towards the pharynx and to block the passage of air. (B) Water and mucus tend to accumulate at the back of the mouth and in the pharynx and thus to close the air passages. (C) When the pressure is exerted upon the front of the ribs there is the risk, especially in elderly subjects, of fracturing the lower fixed ribs, with a resultant traumatic pneumonia in case the individual recovers from the asphyxia. (D) In cases of drowning the liver is greatly congested and if much pressure is exerted upon this region there is danger of producing rupture of the liver, with no chance of the patient's recovery.

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[1] Read before University Medical Society, Oct. 19, 1907.

The carrying out of the new method of Schäfer is less fatiguing to the operator than that of the older methods, such as the Silvester, the Pacini, and the Marshall Hall. With the methods just mentioned it has been found impossible to keep up artificial respiration in a normal but passive subject for any length of time on account of the discomfort and the relative inefficiency of the air exchange, whereas by the new method artificial respiration has been maintained in a passive normal subject for as long as an hour without any fatigue on the part of the operator and without any "air hunger" on the part of the subject.

It is easy to understand that the amount of air exchange by exerting the pressure on the back when the patient is in the prone position is much greater than that by pressure on the chest when the patient is supine. In the supine position part of the pressure is used to distend the abdomen, while with the prone position pressure is exerted over not only the chest but also the abdomen. In the latter method the lung air-space is decreased and increased (expiration and inspiration) much more than in the supine position because instead of having a descent of the diaphragm with the pressure there is an ascent. Comparative measurements on the passive living subject have demonstrated that for periods of time beyond two or three minutes the prone position gives better results than the supine position, although it has been found that with certain methods single measurements give better results than the method of Schäfer. It must be kept in mind, however, that in practising resuscitation it is not a matter of one or two or even a dozen movements. The most efficient method is the one that gives the best results for periods of time beyond ten minutes, for in some cases it is necessary to keep up the movements for an hour or two at a time.

The method has been tested with success in cases of drowning, and the demonstrations on the living subject impressed all with its simplicity and efficiency. Because of its obvious advantages the method should be given first place in courses of ambulance and "first-aid" instruction.

Shepherd Ivory Franz, Ph.D.

III. THE FUNCTIONS OF THE FRONTAL LOBES.[1]

In his paper the reader first took up for consideration all of the important published work on the frontal lobes and considered the hypotheses that had been advanced to explain the functions of this region of the cerebrum. It was pointed out that the earlier investigators considered the frontal part of the brain "the seat of intelligence." Later observers and experimenters recorded facts that were interpreted in different ways according to the emphasis that was laid on the clinical or the experimental evidence. Three hypotheses were advanced at different times: (1) This region of the brain is motor in function, (2) it is inhibitory, and (3) it is the center for states of attention. More recently there has been a return to the earlier view, viz., that the frontal lobes are concerned with the so-called intellectual processes. The experimental and clinical evidence was considered in relation to each of the four hypotheses and the fourth was found to satisfy the facts better than any one or more of the other three. It was pointed out that the facts at hand did not justify a very strong assertion in this matter, and that the most recent attempts to minimize the importance of the right frontal region were not justified by the facts that have been reported. As a contribution to help solve the problem the results that were obtained after extirpation or destruction of the frontals in monkeys and cats were reported, and it was shown that with the employment of a new method it was possible to get data from animals comparable with results from man.

The results with the new method showed clearly—a thing not shown before—that there is a mental change in animals following the removal of the frontals, the change being the loss of certain newly-formed associations or habits. Associations of long standing were reported to be exhibited as well after as before the removal of the frontals, and this fact may account for certain negative results obtained by other investigators. The loss of the associations was shown not to be due to the general shock effects of the operation as such, and it was shown that the associations were not lost after destruction of certain other portions of the cerebrum. The animals that had lost certain associations were able to "relearn" the associations, and a few experiments were reported in which animals lost the associations after a second operation on the frontal region. Many of the animals that were used showed signs of metabolism disorders, but this matter was not carefully investigated.

It was pointed out that not only the frontal regions but also the posterior association areas are probably concerned in the mental processes of man and animals, but less is known about the parieto-occipito-temporal association area than about the frontal. The suggestion is made that the frontal lobes are normally concerned with the production and retention of habits, and that the posterior association area may be likewise employed. The facts for the proof of the latter have not been sufficiently correlated, but as far as could be told at the time it appeared evident that the two areas are used for the formation of associations, the frontal area being concerned more with the motor part of the associational process, the posterior area with the sensory part. Until more data have been accumulated the differentiation in function between the anterior and posterior areas may be considered purely speculative, but it was hoped that some results in this line would be ready for publication within a year.

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[1] Read before University Medical Society, April 20, 1907.

Those specially interested were referred for a full account of the experiments to the monograph published by the reader. (On the Functions of the Cerebrum—The Frontal Lobes. Science Press, New York.)

Shepherd Ivory Franz, Ph.D.

IV. CASE OF PYONEPHROSIS WITH SPECIMEN.

Mrs. I., age 55, married and the mother of six children. About two months after the birth of her first child, which occurred in July, 1874, she had a severe attack of cramps in the left side of her abdomen, which lasted for four or five days. In a few days a large swelling was noticed in the left lumbar region. This began to subside in a few days but never went away entirely. The pain and cramps subsided synchronously with the subsidence of the swelling. These attacks of cramps and severe pain occurred with the swelling at intervals of from six months to two years up to the last attack, which occurred November 4, 1906. She was always confined to her bed from one to two weeks whenever these attacks came on, but they never seemed to interfere with her general health, as she was a very robust and otherwise healthy woman and gave birth to six perfectly healthy children, and had no especial trouble during any of her pregnancies.

I have been familiar with her case for the past ten years, and have seen her in about six of these attacks. Sometimes the muscle spasm and pain were so great that I had to use morphine to relieve her, but never more than twice or three times during any one attack, and then not more than a quarter of a grain was ever given at a dose. In many of her attacks she would relieve the pain with hot fomentations and rest in the bed without sending for a doctor. She had become so well trained as to what to do that she would at once go to bed and resort to this treatment with the result of being out in a few days.

On July 26, '06, she was taken again with great pain and cramps which did not yield to her treatment, so I was sent for. On examination I found a large hard mass extending from under the floating ribs down into the pelvis, and extending over the median line at least two inches. At that time she had no elevation of temperature. The usual treatment of hot fomentations did not relieve her, so morphia was resorted to.

On August 9, two weeks after the beginning of the attack, she had a slight chill which was followed by a temperature of 102 degrees. This was the only time I ever knew her to have a fever temperature in any of the attacks I had seen her in during the past ten years. She rapidly lost strength after this, her pulse became very weak and rapid, and she was quite delirious for about a week. At this time I had Dr. W. P. Carr to see her with me in consultation for his opinion as to the advisability of operating on her. Her condition at that time was so bad that he declined to advise operation; as a matter of fact both of us thought she had but a few days to live, and gave the family a very grave prognosis. She was treated expectantly with heart stimulants, whiskey was given freely with milk, which was about all of the nourishment she had. It was very difficult to nourish her, and but for the close attention of a most faithful and competent nurse, I am sure she would have died. This condition of affairs, with the temperature ranging from 101 to 103, continued for about ten days, when she began to improve slowly; at this time it was very evident the enlargement was decreasing in size and becoming much softer. From this time on her improvement was very rapid and by September 3 she was up, and within another week she was able to go out daily and to do light housework. I never saw one improve so rapidly in all of my experience and in a few weeks she was as robust as ever. She continued in perfect health until November 4, when she was again taken with one of her old attacks as usual. She at once went to bed and resorted to her hot fomentations, etc., but as the pain increased and she again noticed the usual enlargement, she sent for me. I at once arranged to have her transferred to the George Washington University Hospital for an operation, as her condition at this time I thought would justify it. This attack she said was more violent than any she had ever had, and on the second day her temperature rose to 103 degrees. She was very anxious to be operated on, as she said she knew she could not go through another such attack as the one she had had in the summer.

She was operated on by Dr. Carr on November 7. As neither Dr. Carr nor myself was sure of the diagnosis, believing that it was either an enlarged spleen, or a case of hydronephrosis, he made his incision just to the outside of the left rectus muscle, which was about the center of the enlargement. As soon as the abdomen was opened it was evident that it was a case of hydronephrosis. The sac contained at least a quart of fluid which at first ran clear, but was followed by a copious discharge of pus, and with the pus came a pear-shaped stone about the size of a bluebird's egg. The diagnosis was now very clear, that it had been a case of intermittent hydronephrosis caused by the plugging up of the ureter with the stone, which obstruction was relieved whenever the distension was sufficient to dislodge the stone.

As no fever temperature had ever developed during any of the numerous attacks she had had during the thirty-two years of the existence of the hydronephrosis, it is very evident that no infection had ever occurred until the attack she had in July of this year. An examination of the specimen will show that very little normal kidney tissue remains.

The patient died on the third day after the operation from suppression of urine. The urinalysis before the operation showed a slight trace of albumen and some casts. A. R. Shands, M.D.

V. PNEUMOCOCCIC PERITONITIS.

C. B., male, colored, age 26; occupation, barber. Family history, negative. Previous history: Unimportant, except for attack of pneumonia, which he suffered two months ago, from which he has never completely recovered. Has had dyspnœa and severe pain in left side, which was increased by respiratory movements. Has been losing weight rapidly since attack.

Present illness: Began with sudden intense pain in abdomen, accompanied by marked dyspnœa, vomiting, and prostration. Facies drawn and anxious, abdomen distended and tympanitic, abdominal muscles rigid. Decubitus: dorsal, flexion. Pulse rate 108; respirations 22; temperature 98° F.; bowels, constipated. Examination of lungs reveals signs of consolidation over left lower lobe.

Urinary examination: Red blood-cells, leucocytes, and bacteria numerous; albumen present.

Diagnosis: Peritonitis—probably tubercular.

Exploratory laparotomy indicated. Operation: Long incision, left rectus, umbilicus to pubes. Entire viscera carefully examined with negative results as to etiology of peritonitis. The appendix, although perfectly normal, was removed. Peritoneum diffusely covered with sero-fibrinous exudate, which was partially removed and entire cavity irrigated with physiological saline solution. Cultures made from peritoneum. Reacted slowly from anaesthetic and complained of great thirst and singultus.

On the following day the patient was somewhat improved. Conjunctivae slightly icteroid; respirations shallow; rate 36; pulse rate 108-120, feeble and compressible; temperature 96.4° F.; examination of sputum for B. Tuberculosis negative. Patient became progressively weaker, and death occurred four (4) days post-operative.

Necropsy: Wound gangrenous; dense adhesions about intestines; no union whatever; culture from peritoneal fluid; liver pale and soft, cuts easily, slightly enlarged and bile stained; culture from liver;

dense adhesions around entire viscera; spleen much enlarged; culture from spleen; left lower lobe lung congested; bronchioles and alveolae filled with a muco-haemorrhagic material; pleura thickened and densely adherent; slight effusion.

Cultures: Bullion: Growth very slow and unsatisfactory; slightly cloudy and gives off odor.

Gelatin: Growth luxuriant; small bluish-white, rounded, elevated spots scattered diffusely over surface.

Milk: Coagulated.

Morphology: Non-motile organism occurring as small cocci usually in pairs, but a few chains were observed with and without capsule. The organism was recognized with difficulty until capsule was demonstrated by acetic acid and Gram's method.

Staining peculiarities: Stained with all the ordinary aniline dyes and shows capsule by acetic acid method.

Bacteriological conclusions: Incipient pneumonia with delayed resolution, followed by pneumococcic septicaemia and invasion of peritoneum.

Glenn I. Jones, M.D.

VI. AN ABDOMINAL WOUND WHICH OPENED UP ON THE ELEVENTH DAY.

Mrs. C. P., white, female, aged 39, widow. I was called to see her at her residence on February 2, 1907, when I secured this history: Excessive bloody flow from the uterus, which had been constant for the past two weeks. She was violently opposed to an examination and begged to be given a trial on some medicine before submitting to one. She was given fluid extract of ergot, gtts. xv, every three hours and told to inform me as to the result in forty-eight hours. At this time I was again called and found the flow was more excessive. The family history was negative, previous history, good. Menstruation began at fifteen and was normal, lasting from three to five days; she was married at twenty-two; she had one pregnancy and normal labor at twenty-four.

About two years ago it was noticed that the flow, while recurring regularly, was more profuse and lasted from five to seven days. She attributed this to worry over the death of her husband and business affairs. During the last three or four months has had more or less vaginal discharge, very offensive in character.

On January 22, flow began and has continued to this date, February 4. At this time she was much alarmed because of excessive flow and submitted willingly to an examination. The body of the uterus was found to be symmetrically enlarged and boggy, the cervix lacerated, indurated, and bleeding easily. There was a bloody discharge from the uterus.

Appendages appeared to be normal. Strongly suspecting carcinoma, I advised radical operation to be performed as soon as possible. To this the patient agreed. She entered George Washington University Hospital on February 7. At this time the blood examination showed four million four hundred and ten thousand reds, ten thousand six hundred and sixty leucocytes, 100 per cent hemoglobin. Examination of the urine showed it to be normal, except for the high specific gravity, 10.33, although the patient drank large quantities of water. On February 9, a combined vaginal and abdominal hysterectomy was performed. Clamps were left upon the uterine arteries and the vaginal vault, closed about them with catgut. Silk was used in the abdomen. The peritoneum and fascia were closed with continuous sutures of No. 2 catgut, and the skin with interrupted silkworm gut. Post-anaesthetic nausea was marked during the first thirty hours; clamps were removed on the third day and the patient established what appeared to be a good convalescence. On the eighth day the abdominal dressings were removed and the wound appeared to be in excellent condition, so the skin sutures were removed. All appeared to be going well until the eleventh day, when I was called in a great hurry to see her. I found to my great surprise that while using the bed pan the entire wound had opened up, the intestines being exposed and lying loose upon the abdomen. The house staff had bathed off and replaced the exposed bowel, and applied appropriate dressings. The patient was at once anaesthetized that the wound might be closed. Apparently there had been no union at all of the subcutaneous tissues, the omentum being adherent to the peritoneum, muscles and skin. It was found necessary to dissect out and ligate off quite a mass of omental tissue before the wound could be closed. The wound was closed with through-and-through mattress sutures of heavy silver wire. On the twenty-first day (the tenth day after re-closure) the patient developed phlebitis of the left limb, there being marked tenderness over the femoral vein but the pain most severe along the posterior tibial vein. On this day the abdominal sutures were removed but not until after phlebitis had appeared. Except for the phlebitis the patient made a good recovery and was discharged on the thirty-fifth day.

I have seen several cases where the abdominal wound had opened up some days after operation but never one which occurred so late as the eleventh day. It is my opinion that in this case the sutures of catgut in the peritoneum and fascia gave way at the time of the post-anaesthetic nausea and that the omentum at that time was forced up into the wound. That it had been there some days was shown by the adhesions.

The pathological report was made by Dr. D. W. Prentiss, who found the specimen to be non-malignant.

A. Barnes Hooe, M.D.

VII. METHOD OF LOCATING SURGEON'S WOUND UNDER PLASTER CASTS.

The application of a cast frequently covers a wound that the surgeon has made for the purpose of wiring, resection, or other operations upon bone. In order to insure a snug, strong cast the incision cannot be left exposed. So too, when the wound is to be dressed, the smallest window compatible with cleanliness will maintain the greatest rigidity. The size of the window bears an inverse ratio to the strength of the cast.

It has been my experience, actual and from observation, that a wound completely covered with plaster is difficult to locate with exactness, and the least amount of window cutting. Our landmarks are obscured in a hard white envelope, and the fenestra is made from memory. We not infrequently see casts so damaged from large, unnecessary windows, that the remaining isthmus is unable to withstand the strain, the plaster becomes pulverized along a line of greatest tension with only the crinolin left for support, allowing a free, hinge-like movement. In order to remove the minimum of plaster, it has been my practice in the last few months to employ large brass rug tacks, a head about ¾ inch in diameter, and steel point about ¾ inch, sterilized and placed at each end of the wound, upon the layer of gauze next to the skin. Gauze and cotton can be applied above this, the point easily penetrating. The cotton batting and plaster bandage are used in the ordinary way, care being taken that the tack pierces each layer as it covers it. When the cast is completed we have one steel point at each end of the wound, projecting from ⅛ inch to ½ inch, depending on the thickness of the dressing and cast. The points are afterward covered with corks or beeswax. Should the points project in such a region that the elevations would be objectionable, I would suggest that the tacks be previously heated over a gas flame to remove the temper and the points turned down with forceps after the cast has hardened; the tacks can be used repeatedly.

There are other ways of locating wounds under casts, but none, to my knowledge, that is so simple and exact, and that preserves the symmetry and beauty of a cast.

CHARLES S. WHITE, M.D.

VIII. CASE OF TYPHOID FEVER FOLLOWING EPIDEMIC INFLUENZA.

The following case is reported, not because of any peculiarity in the two diseases, but more because of the rarity of their sequence.

The history of the case is as follows:

Mrs. D. M. M., age 28, married, social condition good. Family history: Father died age 78, cause unobtainable, mother died at age of 57, with tuberculosis. Two brothers died with tuberculosis of lungs in early manhood. One sister died in early womanhood, with tuberculosis of lungs.

Previous history: Patient, while not robust, had never had a serious illness.

Present illness: Began suddenly January 1, 1907, with chilly sensations, headache, pains in the back and extremities, anorexia and a sense of fever. With the development of a slight cough the above symptoms had continued up until the morning of January 3, when I first saw the patient. A tentative diagnosis of influenza was confirmed by subsequent observation. The patient's condition gradually improved during the following ten days.

I was again summoned to see the patient on January 21, 1907. The subsequent cause of the condition showed a typical attack of enteric fever in every respect cardinal symptoms were all present. Epigastric pain, rose spots, coated tongue, fetid breath, enlarged liver, and spleen, widal reaction and leukopenia. The temperature curve as shown by morning and evening chart was characteristic. There was associated with the enteric infection an excessive catarrhal condition of the respiratory tract, the bronchitis being apical rather than basal, a condition that for some days considering the strong family history of tuberculosis, caused me no little uneasiness. There was, however, a perfect recovery.

EDGAR P. COPELAND, M.D.

IX. ANOMALIES OF THE ENCEPHALIC ARTERIES AMONG THE INSANE.

An important paper from the pen of Professor I. W. Blackburn on "Anomalies of the Encephalic Arteries Among the Insane" is to be found in a recent number of *The Journal of Comparative Neurology and Comparative Psychology.* In this article Doctor Blackburn has described all the anomalous conditions of the arteries of the Circle of Willis in a series of two hundred and twenty consecutive autopsies, of which number only sixty-five showed no anomaly. Each of the main arteries are considered separately and statistics are given of the frequency of anomalous conditions in it. Three cases are reported at length, forty are given briefly, and there are illustrations of nineteen of the most striking abnormal arrangements of the arteries. Although primarily anatomical in scope the article contains much material that the physiologist, the neurologist and the surgeon should keep in mind. It is hoped that Doctor Blackburn will amplify in another article his general remarks on the mechanics of the cerebral circulation, and that he will also publish in an appropriate journal a correlation of the anomalous arterial conditions with the pathological changes in the cerebrum and cerebellum.

X. KING'S MANUAL OF OBSTETRICS.

The recent, the tenth, edition of Dr. A. F. A. King's Manual of Obstetrics has been received with as many expressions of approval as were the earlier editions. Some of the errors of the previous edition have been corrected and some of the older methods omitted. The chapters on fecundation and nutrition of the embryo have been largely rewritten and there have been extensive changes in the chapters on pelvic deformities, cutting operations on the mother, mutilating operations on the child, placenta previa, and puerperal septicema. Many new cuts and three colored plates have added to the presentation of the subject. Of the book *The New York Medical Record* says: "It is characterized by accuracy, brevity and simplicity of statement. Many generations of students have found this book to be a most reliable guide and it can still be recommended as probably the best small book on the subject." *The Virginia Semi-Monthly* says: "It covers every essential, practical part of obstetrics. It would be difficult to suggest any eliminations in the text." The reviewer in *The American Journal of Medical Sciences* writes: "It is a pleasure to commend a work which in addition to the dignity and authority of age, exhibits also the freshness of rejuvenescence."

XI. NEW METHODS OF VERSION IN TRANSVERSE PRESENTATION.

As a science and as an art obstetrics is considered by most medical practitioners to be in a position similar to anatomy, that all of the important matters have been discovered, and that only the finer points need to be worked out in more detail. That careful observation and acuteness of reasoning in such a practice as obstetrics will be the means of discovering and applying new facts and of devising new methods is well shown by a recent paper by Dr. A. F. A. King, in which he describes a new method of delivery in cases of transverse presentation. The advantages of the new method are so obvious after one has read the article that it occasions surprise that it was not described or thought of years ago. For the proper appreciation of the matter the whole article should be read by all who have any obstetrical practice. The method was described before the recent meeting of the American Gynecological Society in Washington, was well received there and later a very complimentary editorial account appeared in the *New York Medical Journal.* The paper is entitled "New Methods of Version in Transverse Presentations," and is published in full in the August number of *Surgery, Gynecology and Obstetrics.* The article is illustrated by seven figures which not only greatly help in the understanding of the method but which prevent any misunderstanding.

XII. PRESENT DAY THEORY OF PULMONARY TUBERCULOSIS.

Dr. B. M. Randolph has an important resumé of the present day therapy of pulmonary tuberculosis that should have a wide circulation, (*New York Medical Journal,* September 1, 1906). In the article Dr. Randolph discusses the methods that are employed in these cases, and discusses at some length (1) rest, (2) pure air, (3) food, and (4) drugs. On the fourth topic it is stated that the only drugs which are to-day generally prescribed, because the patient has consumption, are cod-liver oil and creosote. The cod-liver oil should, however, be considered more as an easily digested food than as a drug. The creosote acts as a stimulant expectorant and at the same time it prevents dyspepsia, increases the appetite and in this way helps to keep up the general bodily health. It should be given in small doses, it is said, and not to the limit of tolerance on account of its deranging effect on the gastro-intestinal tract. The author summarizes his paper as follows: "Every method of treatment of pulmonary tuberculosis, which has stood the test, has for its prime object the improvement of nutrition. We cannot become narrow advocates of any one remedy system or method, but owe it to our patients to employ every available means that will lead to improved nutrition. We must take into consideration every circumstance connected with each individual patient, and modify our remedies, both in their selection and application, according to the needs of the patient." As a general summing up he says: "Treat the patient and the patient will take care of the disease."

XIII. OBSERVATIONS OF OPSONIC THERAPY IN WRIGHT'S CLINIC.

At the meeting of the George Washington Medical Society, November 16, 1907, Dr. John Benjamin Nichols gave an account of personal observations of opsonic therapy in the clinic of Sir Almroth E. Wright, at Saint Mary's Hospital, in London.

A year ago great interest was aroused in America by the addresses given by Dr. Wright on the opsonic theory and practice developed by him and his collaborators. This was followed last spring by a series of papers by American workers who for the most part had failed to obtain the results claimed by Wright and condemned and criticized his methods.

Under these circumstances, with enthusiastic claims on one side, and disparaging criticisms on the other, Dr. Nichols spent several weeks in the summer of 1907 in the clinic and laboratory of Dr. Wright, as well to observe the actual clinical results obtained by the ingenious originator of the method as to acquire the technique. The presentation of the observations thus made was the purpose of Dr. Nichols's report.

He gave an account of the materiel, the personnel, and the general methods and conduct of Dr. Wright's establishment. Large numbers of patients were observed under treatment, reporting ordinarily at the clinics every ten days. The particular forms of disease adopted to the treatment are chronic localized infections caused by any cultivable bacteria. The great majority of the patients were cases of localized tuberculosis, especially of the glands, joints, skin, and bladder. The remaining patients were those with infections of staphylococci (acne, furunculosis, carbuncle), colon bacilli (cystitis), steptococci, pneumococci, gonococci, nasal infection, etc. Many of the cases were of the most obstinate character, in which after all other therapeutic resources were exhausted in the skin, surgical, and other clinics of London the patients were sent as a last resort to Wright's service. Whatever results could be obtained in such desperate and refactory cases were all pure gain. While some cases did not show much effect from the inoculations, yet in many the treatment undoubtedly produced improvement and cure, and in some the results were really brilliant.

The principal controversy in this matter centers around the accuracy, the significance, the usefulness, and the feasibility of determinations of the opsonic index. As to accuracy, the workers in Wright's service seemed to be able to obtain consistent and agreeing results within a margin of variation small enough to be negligible. Some of the critics of Wright's methods exhibit an unfamiliarity with many of the minute details which are essential to reliability and accuracy; or are led astray in the effort to introduce innovations and "improvements" of the technique. As to the significance of the opsonic indices, the whole theory and practice of inoculation therapy as elaborated by Wright was based on these determinations. As to their usefulness, Wright, with all his clinical experience along this line, professes that he needs the information afforded by them as an aid in diagnosis and control of the treatment, and goes to much labor and expense to procure them. While in strictly chronic cases in which the inoculations do not have to be pushed, the course of the antibacteria activities can be largely "visualized," and the determination of the opsonic indexes as a control for every individual injection may perhaps be largely dispensed with or replaced by clinical observation, yet for certain diagnostic purposes, and as a guide to inoculation in acute septic cases, reliance on opsonic estimations will be necessary.

As the result of his observations, Dr. Nichols believed that the conclusion was justified that in the class of cases to which it is adapted, chronic localized infections due to the tubercle bacillus, staphylococcus, streptococcus, pneumococcus, gonococcus, colon bacillus, micrococcus catarrhalis, etc., and perhaps some acute septic conditions—controlled when necessary by opsonic determinations, the inoculation of stock or autogenous bacterial "vaccines" is a therapeutic agency of distinct efficiency and promise, either in association with other therapeutic measures or in cases after all other procedures have failed; and that it is a specific and curative method in cases in which there is no other specific or definite mode of treatment available aside from symptomatic or palliative measures.

XIV. ETIOLOGY AND CLASSIFICATION OF FUNCTIONAL HEART MURMURS.

P. E. McDonnold, M.D. (G.W.U. '98), Passed Assistant Surgeon U. S. Navy, contributes in the U. S. Naval Medical Bulletin, Vol. I, No. 3, an interesting article on the so-called functional or accidental heart murmurs with special reference to their etiology and classification. Dr. McDonnold states that his attention was first called to the great frequency of the so-called functional murmurs while serving on the medical examining board for the examination of candidates for entrance to the Naval Academy during which time about 350 young men ranging from 16 to 20 years came before the board for physical examination. These examinations were held immediately after the mental examinations had been passed and as a result the candidates appeared before the examining board in a state of more or less physical exhaustion. They had not only been spending long hours in study, with consequent loss of sleep, and possibly the overuse of tobacco, but had been attempting at the same time to bring themselves up to the required physical standard by athletic exercises of various sorts. The excitement attendant upon the examination acted as an additional factor in the production of such a large number of functional heart murmurs that the members of the examining board came finally to expect a murmur rather than the contrary in every candidate who presented himself. The greater portion of these murmurs were systolic, with maximum intensity in the pulmonary area, but a number had their maximum intensity in the mitral or aortic areas, and they were accompanied at times by physical signs which made their differentiation from organic murmurs exceedingly difficult. This experience interested Dr. McDonnold in the significance of such murmurs, and in his paper he summarizes the important literature on the subject with special reference to the frequency of heart murmurs and the causes to which they may be attributed.

Among the causes which have been suggested as being productive of functional murmurs, at times, are the following: Pressure on the pulmonary artery by the heart during systole, squeezing it against the chest wall as a result of the retraction of the lung from the base of the heart (Quincke); spasm of the columnae carneae, preventing perfect closure of the valves (Upshur); disproportion between the size of the ventricular cavities and the length of the chordae tendineae and musculi papillaries (Bristowe); a lateral displacement of the origin of the musculi papillares on account of dilatation of the heart (ibid.); imperfect closure of the valves from rapid heart action or a disturbance of the pneumogastric nerve from gastric disorders (Conkling); a dilatation of the alveoli of the lungs from frequently holding the breath, as in heavy lifting or hard labor, accompanied by a temporary stagnation of the blood and its sudden release—this becoming a habit and inducing chronic changes (ibid.); a friction between the pericardium and the chest wall caused by a wrinkling of the former or by the "white patch" on the wall of the right ventricle (ibid.); pleuropericardial friction (Syers); pericardial and phrenic friction when the stomach is distended with gas (Root and others); palpitation of the heart from nervous causes (Allbutt); sonorous vibrations transmitted to the stethoscope by a peculiar ventricular shock at times, and, on other occasions, vibrations of the conus arteriosus of the right ventricle (Drummond). Finally, Davidson would explain all murmurs by vibrations set up in the valves of the heart by impact of the blood stream at an oblique angle.

Dr. McDonnold thus concludes his study: "We have seen that while these murmurs are functional in the sense of their not being due to organic valvular disease, a certain number of them are dependent for their production upon disease or debility of a more or less temporary character of either heart muscle, the tissues in immediate proximity to the heart, of the body elesewhere. It has been shown that a purely functional murmur, however, may occur at any point over the praecordia during comparative health, and that unless there are signs of cardiac enlargement, venous engorgement, or systematic disease coexistent with a murmur it cannot be taken as indicative of either organic heart disease or of serious ill health. The presence of a murmur therefore should merely put us on our guard as examiners and cause us to look for other signs which alone will determine the true significance of the sound."

W. F. R. Phillips, M.D.

BIBLIOGRAPHICAL RECORD.

DECEMBER 1, 1906, TO DECEMBER 1, 1907.

This Bibliographical Record is the third annual Supplement to the University Bibliography, containing titles of books, monographs, papers, etc., published by members of the Faculty and Doctors of Philosophy, issued September 1, 1904. It embraces titles of publications by University instructors and graduates appearing during the past year, and complete lists of the publications of members of the Faculty whose names were not included in the Bibliography of 1904, or the 1905 or 1906 supplement. The abbreviations used are current in scientific publications.

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The Essentials of Aesthetics. New York and London: G. P. Putnam's Sons, John Murray, Feb., 1907, 433 pp.

The Psychology of Inspirations. New York: Funk and Wagnalls Company, Dec., 1907, 350 pp.

The limitations of language in the expression of truth. G.W.U. Bull., VI, No. 3, 56-60, Oct., 1907.

RICHARDSON, EDWARD ELLIOTT, Ph.D., (G.W.U., 1907-).

Mechanism and teleology. G.W.U. Bull., VI, No. 3, 87-91; Oct., 1907.

RUEDIGER, WILLIAM CARL, Ph.D., Assistant Professor of Educational Psychology (1907-).

Geography in the upper grades. Normal Coll. Bull., Dillon, Montana, Dec., 1903.

Has the dividing line between elementary and secondary education been drawn at the proper point? Elementary School Teacher, V, 482-492, 1905.

Literary reading in the upper grades. Normal Coll. Bull., Aug., 1905.

Suggestions for the teaching of geography. Jour. of Geog., IV, 433-445, 1905.

How to study. Inter-Mountain Educator, Dillon, Mont., Jan. and Feb., 1906.

Aspects of the professional work in State normal schools. Education, XXVII, 174-179, 1906.

Recent tendencies in the normal schools of the United States. Ed. Rev., XXXIII, 271-287, 1907.

The field of distinct vision. Arch. Psych., No. 5, 1-68, Jan., 1907.

The period of mental reconstruction. Amer. Jour. Psych., XVIII, 351-370, 1907.

Glimpses into the schools of Hamburg, Germany. Education, XXVIII, 224-232; Dec., 1907.

SKINNER, W. W., M.S. (G.W.U., 1899-).

Artesian water. Arizona Station Report, 1900.

Home-made fertilizers. Bull. 38, Arizona Exper. Station.

Irrigating waters. Arizona Station Report, 1901.

The extermination of gophers and ants. Bull. 45, Arizona Exper. Station.

Pickling olives for home use. Bull. 51, Arizona Exper. Station.

River irrigating waters. Arizona Station Report, 1902.

Forage products. Arizona Station Report, 1902.

Range forages. Arizona Station Report, 1902.

Underground waters of Arizona: Their character and uses. Bull. 46, Arizona Exper. Station.

Method of determinging black alkali in irrigating waters and soil extracts. Jour. Amer. Chem. Soc., XXVIII, No. 1.

Copper salts in irrigating waters. Jour. Amer. Chem. Soc., XXVIII, No. 3.

Recent work in agricultural chemistry. Jour. Amer. Chem. Soc., XXVIII, No. 8.

Report of referee on inorganic plant constituents, 1906. Bull. 105, Bureau of Chemistry, U. S. Department of Agriculture.

The volatilization of certain elements in ashing plant materials. Read before A. A. A. S., Dec. 27, 1907.

Report of referee on inorganic plant constituents, 1907. [In print 24th proceedings A. O. A. C.]

Abstracts on mineral waters and insecticides for "Journal of Chemical Abstracts."

SMITH, CHARLES SIDNEY, Ph.D., Professor of Greek and Latin (1890-).

Notes on the style of Seneca the philosopher. G.W.U. Bull., VI, No. 3, 70-75; Oct., 1907.

STERNBERG, GENERAL GEORGE M., U.S.A., Professor of Preventive Medicine (1905-).

Preventive medicine. G.W.U. Bull., V, No. 4, 55-64; Dec., 1906.

STERRETT, J. MACBRIDE, M.A., D.D., Professor of Philosophy (1892-).

The Kantian basis of agnosticism. G.W.U. Bull., VI, No. 3, 40-55; Oct., 1907.

VANCE, WILLIAM R., Ph.D., LL.B., Professor of Law (1903-), and Dean of the Department of Law (1905-).

Legal education in the South. G.W.U. Bull., VI, No. 3, 18-27; Oct., 1907.

VEITCH, F. P., M.S. (G.W.U., 1898-).

The amount of washing required to remove the phosphoric acid rendered soluble by digestion at 65°. Bull. 49, p. 73, 1897, Bureau of Chemistry, U. S. Department of Agriculture.

The direct determination of available phosphoric acid. Jour. Amer. Chem. Soc., XXI, 1090, 1899.

Gas, oyster shell and stone lime. [In collaboration.] Maryland Agricultural College Quart., No. 4, 1899.

Note upon the determination of nitrogen in fertilizers containing nitrates. Jour. Amer. Chem. Soc., XXI, 1094, 1899.

The estimation of aluminum and ferric oxid in natural phosphates. Jour. Amer. Chem. Soc., XXII, 246, 1900.

The chemical composition of Maryland soils. Bull. 70, Maryland Agricultural Experiment Station, 1901.

The estimation of soil acidity and the lime requirements of soils. Jour. Amer. Chem. Soc., XXIV, 1120, 1902.

On the colorimetric determination of small quantities of phosphoric acid and of silica. Jour. Amer. Chem. Soc., XXV, 169, 1903.

Report of the referee on soils, 1903. Bull. 73, p. 101, Bureau of Chemistry, U. S. Department of Agriculture.

Fertilizers: Resumé of the progress of analytical chemistry in the U. S. since 1900. Fifth Internat. Kong. Agnew Chemie (1903), 1st Band, 486.

Report of the referee on soils, 1904. Bull. 81, p. 134, Bureau of Chemistry, U. S. Department of Agriculture.

Summary of experiments on the relation of soil acidity to fertility. Bull. 90, p. 183, 1904, Bureau of Chemistry, U. S. Department of Agriculture.

Comparison of methods for the estimation of soil acidity. Jour. Amer. Chem. Soc., XXVI, 636, 1904.

Estimation of potash in soils, plants and fertilizers. Jour. Amer. Chem. Soc., XXVII, 56, 1905.

A discussion of methods for the estimation of tannin. Bull. 90, p. 215, 1905, Bureau of Chemistry, U. S. Department of Agriculture.

The estimation of small quantities of phosphoric acid by the volumetric method. Bull. 90, p. 186, 1905, Bureau of Chemistry, U. S. Department of Agriculture.

The extraction of tanning materials with various extractors. Jour. Amer. Chem. Soc., XXVII, 724, 1905.

Determination of color in tanning materials. Jour. Amer. Leather Chem. Assn., I, 253, 1906.

The effect of fertilizers on the reaction of soils. Science N. S., XXIII, 710, 1906.

Plant growth as influenced by soil acidity. Bull. 99, p. 118, 1906, Bureau of Chemistry, U. S. Department of Agriculture.

Extraction of tanning materials for analysis. [In collaboration.] Jour. Amer. Chem. Soc., XXVIII, 505, 1906.

Review of recent chemical work on soils and fertilizers. Jour. Amer. Chem. Soc., XXVIII, 1047, 1906.

Examination of papers. Circular 34, Bureau of Chemistry, U. S. Department of Agriculture.

Paper-making plants. Bailey's Cyclopedia of Agriculture, II, 1907.

Tanning plants. Bailey's Cyclopedia of Agriculture, II, 1907.

The determination of nitrogen in leather. [In collaboration.] Jour. Amer. Chem. Assn., II, 1907.

Chemical methods for utilizing wood. Circular 36, Bureau of Chemistry, U. S. Department of Agriculture, 1907.

Assistant Editor of "Chemical Abstracts," in charge of abstract work on soils and fertilizers.

WHITE, WM. A., M.D., Professor of Mental Diseases (1903-).

The nature of insanity. Wash. Med. Ann., Sept., 1907.

Outlines of Psychiatry. A text-book, 200 pp. [In press.]

WILEY, HARVEY WASHINGTON, Ph.D., Professor of Agricultural Chemistry (1893-).

Foods and Their Adulteration: Origin, manufacture and composition of food products, with a description of the common adulterations, food standard and national food laws and regulations. Philadelphia: P. Blackiston's Son & Company, 1907, 625 pp. [Illustrated.]

WILLIS, H. PARKER, Ph.D., Professor of Finance (1905-).

The Philippines and the Filipinos: A reply. Political Science Quarterly, March, 1907.

Reciprocity with Germany, I. Journal of Political Economy, June, 1907.

Reciprocity with Germany, II. Journal of Political Economy, July, 1907.

An American statesman. Putnam's Monthly, July, 1907.

Political tendencies and new national issues. New York Journal of Commerce and Commercial Bulletin, Jan. 2, 1907.

WILLOUGHBY, W. W., Ph.D., Professor of Political Science (1907-).

The Supreme Court of the United States: Its History and Influence in our Constitutional System. Johns Hopkins University Press, 1890.

The Nature of the State. The Macmillan Co., 1896.

The Rights and Duties of American Citizenship. The American Book Co., 1898.

Social Justice. The Macmillan Co., 1900.

The Political Theories of the Ancient World. Longmans, Green & Co., 1903.

The American Constitutional System.. The Century Co., 1904.

Also numerous contributions to current periodicals.

UNIVERSITY APPOINTMENTS.

DEPARTMENT OF ARTS AND SCIENCES.

Faculty of Graduate Studies.

Assistant Professor of Physics: Perley G. Nutting, Ph.D.

A.B., Stanford University, 1897; M.S., University of California, 1899; Whiting Fellow at University of Göttingen, 1901-1902; President White Fellow, Cornell University, 1902-1903; Ph.D., *ibid.,* 1903; Assistant in Physics, Stanford University, 1897-1898; Assistant in Physics, University of California, 1898-1901; Assistant Physicist, U. S. Bureau of Standards, since 1903; Member American Physical Society, Philosophical Society of Washington, American Association for the Advancement of Science.

Columbian College.

Professor of Zoology for 1907-'08: C. Dwight Marsh, Ph.D.*

A.B., Amherst College, 1877, A.M., *ibid.,* 1880; Ph.D., University of Chicago, 1904; Professor of Chemistry and Biology Ripon College, 1883-1889; Dean of Faculty, *ibid.,* 1900-1903; Acting President, *ibid.,* 1900-1901; Professor of Biology, Earlham College, 1904-1905; Expert in Poisonous Plant Investigations, Bureau of Plant Industry since 1905; President of Wisconsin Academy of Sciences, Arts and Letters, 1896-1899; Member of Board of Commissioners Wisconsin Geological and Natural History Survey, and Secretary of Board, 1897-1899; Biologist, *ibid.,* 1899-1904; Fellow American Association for the Advancement of Science, Member American Society of Naturalists, American Society of Zoologists, Botanists of the Central States, etc.

DEPARTMENT OF MEDICINE.

Professor of Bacteriology and Pathology: Joseph J. Kinyoun, M.D., Ph.D.

M.D., Bellevue Hospital Medical College, 1882; Ph.D., Georgetown University, 1894; Studied, University of Berlin, 1890-1891, Institute Pasteur, Paris, 1891 and 1894; Director Hygienic Laboratory, U. S. Marine Hospital Service, 1889-1899; Professor of Bacteriology and Pathology, Georgetown University, 1890-1899; Special Lecturer on Immunity Serum Therapy and Protective Inoculations, 1903-1907; Member American Medical Association, Association of American Physicians, Association of Bacteriologists and Pathologists; Society of American Bacteriologists, The College of Physicians of Philadelphia, the Pathological Society of Philadelphia, American Public Health Association, the American Association for the Advancement of Science.

Assistant Professor of Pediatrics: J. Fremont Smith, M.D.

A.B., Dartmouth College, 1880; M.D., University of Pennsylvania, 1883; Member New York Academy of Medicine, American Climatological Association, American Medical Association, American Association for Study and Prevention of Tuberculosis, Medical Society of the District of Columbia.

Assistant Professor of Surgery: William Francis Mattingly Sowers, M.D.

A.B., Princeton University, 1896; M.D., Johns Hopkins University, 1900; Resident House Officer, Asst. Resident, Resident Surgeon, Assistant and Instructor, *ibid.,* 1900-1907.

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* In place of Professor Paul Bartsch who is on leave of absence.

DEPARTMENT OF LAW.

Instructor in International Law: Ellery C. Stowell, A.B., LL.B.

A.B., Harvard, 1898; Studied, University of Berlin, 1903-1904; Graduated École libre des Sciences politiques (Section diplomatique), and licencié en droit, University of Paris, 1906; Secretary for the Delegation of Panama at the Hague Conference, 1907.

UNIVERSITY MISCELLANEA.

Dean Howard L. Hodgkins, of the Department of Engineering, attended the meetings of the American Association for the Advancement of Science, held in Chicago, December 30 to January 4.

Professor Mitchell Carroll attended the meetings of the American Philological Association and the Archaeological Institute of America, held at the University of Chicago, December 28-31. He has been granted a leave of absence by the University for the first ten days of January, that he may visit Denver and other cities in the interests of the Archaeological Institute of America.

Professor James Brown Scott, of the Department of Law, was tendered a dinner at the New Willard Hotel, Saturday evening, December 21, in recognition of his distinguished services as Technical Delegate of the United States to The Hague Conference. About 100 were present. Hon. H. B. F. Macfarland acted as toastmaster. Speeches were made by Ambassador Bryce, Hon. John W. Foster, President Needham, Professor Scott, and others.

Professor C. W. A. Veditz, during the Christmas holidays attended the meetings of the American Sociological Society, of which he is Secretary, at Madison, Wisconsin, and of the American Economic Association. Dr. Veditz has been made editor-in-chief of the quarterly periodical issued by the latter.

During the approaching summer, Dr. C. W. A. Veditz will be a member of the Summer School faculty at the University of Michigan. He will offer courses in theoretical and practical sociology and an advanced course in " Suicide."

Rev. Benjamin Alfred Dumm, Ph.D. (G.W.U., 1900), Pastor of the First Church, Stoneham, Mass., has recently conducted a series of conferences on " The Social Problem," under the auspices of the Woburn Association of Massachusetts.

We are in receipt of a paper read at a meeting of the American Brewing Institute, held at The Chemists' Club, New York City, entitled, " Improving the Quality of Domestic Hops," by W. W. Stockberger, Ph.D. (G.W.U., 1907).

Dr. H. L. McBain, Instructor in Political Science, will deliver a lecture at Richmond College early in January, on "The Teaching of Political Science in the South."

The Maryland Agricultural Experiment Station has published the thesis of Martin N. Straughn, Ph.D., 1906, as Bulletin 20, under the title "Sweet Corn Investigations."

We are in receipt of a copy of the "Report of the Board of Education of Summit, New Jersey," for the year ending June 30, 1907, by Louise Connolly (B.S., 1893, M.S., 1895, G.W.U.), Supervising Principal of the public schools of that city.

The Bureau of Standards of the Department of Commerce and Labor, has published as Reprint No. 64, the thesis submitted by Frederick W. Grover for the degree of Ph.D., June, 1907, entitled, "Simultaneous Measurements of the Capacity and Power Factor of Condensers."

Dr. Perley G. Nutting, of the Bureau of Standards, has been appointed Assistant Professor of Physics under the Faculty of Graduate Studies. His academic record appears elsewhere in this Bulletin. Since 1903, he has been Assistant Physicist at the Bureau of Standards, and is considered an authority on optics and spectroscopy. Dr. Nutting will conduct both theoretical and experimental work on spectroscopy.

The Classical Club will hold its eighth anniversary exercises on Saturday evening, January 4, 1908, in University Hall. Professor David G. Hogarth, Director of the Cretan Exploration Fund, and for sometime Director of the British School at Athens, will give an illustrated lecture on "The Aegean and Crete."

Arrangements have been made by the University Debating Council for three intercollegiate debates. There is to be a return debate with the University of North Carolina, which met defeat here last year at the hands of the local university. The men who will represent the latter are J. M. Berry and E. G. Schreiber. The debate will take place at Chapel Hill, N. C., late in March.

The other debates are to be with the University of Pennsylvania and the West Virginia University, both probably in this city, one in April and one in May. It is understood that in addition to the debates with Pennsylvania, North Carolina and West Virginia, endeavors have been made to meet Virginia and Georgetown.

An article on the "George Washington University College of Engineering" appeared in the *Electrical World* of November 30, 1907. It describes particularly the laboratory facilities that have been added this fall, and calls attention to the efficiency of the teaching staff and the record made by its students.

Mr. Arthur P. Davis, Chief Engineer of the United States Reclamation Service and a graduate in civil engineering of the George Washington University, was elected President of the Washington Society of Engineers at the annual meeting on December 17. Professor Philander Betts, of the faculty of the College of Engineering was elected to the Board of Directors of the Society. This Society was organized in 1905, and has more than 300 members. The first president was Admiral C. W. Rae, Chief Engineer United States Navy and a trustee of the Washington College of Engineering. The second president, who has just retired from office, was Mr. F. H. Newell, Director of the United States Reclamation Service and also a trustee of the Washington College of Engineering.

George E. Myers, Ph.D., Lecturer on the History of Education, attended the meeting of the Association of Colleges and Preparatory Schools of the middle states and Maryland, held in New York during the Thanksgiving recess, and read a paper upon "Influence of Present Methods of Graduate Instruction Upon Teaching in Secondary Schools." Dr. Myers also addressed the meeting of the Federal Schoolmen's Club, of Washington, on December 8, upon the subject of "Certification *vs.* Examination for College Entrance." His remarks were followed by an unusually interesting discussion.

About January first there will be issued a text book of psychiatry by Dr. W. A. White, Professor of Mental Diseases and Superintendent of the Government Hospital for the Insane. The book is intended for the use of students in connection with the course of lectures and demonstrations that are given by Dr. White during the second semester. The announcement and table of contents indicate that the classification of mental diseases is somewhat similar to that of Kraepelin, and that more attention than is usual in such works is to be devoted to the practical examination of the insane.

The Division of Education has established a department library, which promises to be of great service in connection with the educational courses. The library room is open throughout the day, and is conducted as a seminary reference library, although the privilege of drawing books for over night is extended to members of the educational classes. The history of education, general educational theory, the theory and practice of secondary and elementary education, methods of teaching special subjects, general and comparative psychology and child study, are all well represented. The reports of the Commissioner of Education, proceedings of the National Educational Association, and the current educational and psychological journals are also represented.

Dr. S. I. Franz, Professor of Physiology and Experimental Psychology, and Psychologist in the Government Hospital for the Insane, has been invited to deliver during the Christmas holidays two addresses at Toronto, and to demonstrate some methods of mental examination before physicians in the hospitals for the insane of the Province of Ontario, Canada. The topics of the addresses are "The Development and Needs of Modern Psychiatry" and "Problems and Recent Advances in the Study of Insanity."

Accounts of the main scientific and social proceedings of the recent International Congress of Physiology, at Heidelberg, and of Neurology, Psychiatry, Psychology, and Nursing of the Insane, at Amsterdam, have been written by Dr. Franz; a general account and comparison of the two congresses appears in *Science,* the important psychological papers are reported in the Journal of Philosophy, Psychology and Scientific Methods, and the neurological contributions of general interest are given in abstracts in *The Journal of Comparative Neurology and Comparative Psychology.*

Dr. William A. White, Professor of Mental Diseases, and Dr. Shepherd Ivory Franz, Professor of Physiology, attended the meetings of the First International Congress of Neurology, Psychiatry, Psychology, and the Nursing of the Insane, held in Amsterdam, September 2-7. Dr. Franz also attended the Seventh International Congress of Physiologists, in Heidelberg, August 12-16. Dr. White acted as representative for the United States at the Amsterdam Congress on a special board for the study of the etiology of insanity.

Several members of our Medical Faculty are participating in the preparations for the International Congress on Tuberculosis to be held in Washington, September 21 to October 12, 1908. Some of the most eminent of the foreign investigators in the fields of medical research and public hygiene have accepted the invitation of the committee of arrangements to take part in the series of lectures that will be delivered during the sessions of the Congress. Among those who have expressed their intention to attend the Congress are Dr. R. W. Philip, of Edinburgh, founder of the first tuberculosis dispensary; Dr. Theodore Williams, of London; Dr. Arthur Newsholme, health officer of Brighton, England, director of King Edward's Sanitarium; Dr. C. H. Spronck, of Utrecht, Holland; Dr. Karl Turban, of Davos-Platz, Switzerland, the originator of the scheme generally followed at present for the classification of tuberculosis; Dr. Gotthold Pannwitz, of Berlin, secretary general of the International Conference on Tuberculosis; Dr. Emil von Behring, of Marburg, the originator of the diphtheria antitoxin; Dr. A. Calmette, director of the Pasteur Institute at Lille, France; Dr. Maurice Letulle, of Paris, secretary general of the last International Congress of Tuberculosis, and Dr. S. Kitasato, of Tokio, Japan, director of the Imperial Institute for the Research of Infectious Diseases.

The Congress will be divided into seven sections—pathology and bacteriology, over which Dr. William H. Welch, of the Johns Hopkins, will preside; clinical study of tuberculosis, presided over by Dr. Vincent Y. Bowditch, of Boston; surgery and orthopedics, Dr. Charles H. Mayo, of Rochester, Minn., president; tuberculosis in children, under the presidency of Dr. Abraham Jacobi, of New York City; hygenic, social, industrial and economic aspects of tuberculosis, Mr. Edward T. Devine, of New York City, president; state and municipal control of tuberculosis, under the presidency of Surgeon General Walter Wyman, of the United States Public Health and Marine Hospital Service, and tuberculosis in animals and its relation to man, Dr. Leonard Pearson, of Philadelphia, president.

The George Washington University Medical Society which was organized in 1905 is steadily growing in interest and effectiveness, and has entered upon its third year with an enlarged membership. It holds regular monthly meetings for the reading and discussion of papers and informal smokers follow the regular exercises.

The following is a list of papers read since October, 1906 up to the close of the year 1907:

1906

Oct. 20. Tetanus. By Dr. H. S. Medford.
Nov. 17. Cholelithiasis. By Dr. E. C. Prentiss.
Dec. 15. Acute Glandular Fever. By Dr. Glenn I. Jones.

1907

Jan. 19. (1) Biographical Sketch of Dr. Jesse Ewell, the first graduate of the Medical School. By Dr. Jesse Ewell, his grandson.

(2) Ten Years' Experience as an American Surgeon in China. By Dr. W. H. Dodson.

Feb. 16. Tic Douloureux and Its Treatment by Deep Injections of Alcohol. By. Dr. Wm. H. Syme.

Mar. 23. The Routine Use of the X-ray in Fractures, with Stereopticon slides. By Dr. Chas. S. White and Dr. Thomas A. Groover.

Apr. 20. (1) Sterility in the Male and Its Operative Treatment. By Dr. Francis R. Hagner.

(2) Functions of the Cerebral Frontal Lobes. By Dr. Shepherd I. Franz.

May 18. Second Annual Meeting and Smoker, with Address by the President, Dr. J. W. Chappell.

Oct. 19. (1) The history of the Medical School. By Dr. A. F. A. King.

(2) Observations on a Newly Reported Method of artificial Respiration. By Dr. Shepherd I. Franz. (This is the first time this method has been demonstrated before a medical society in this country.)

Nov. 16. Observations of Opsonic Therapy in Wright's Clinic. By Dr. J. B. Nichols.

Dec. 21. Manic Depressive Insanity. By Dr. Wm. A. White.

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1908/09

The
George Washington University

DEPARTMENT OF MEDICINE

ANNOUNCEMENT
FOR THE
EIGHTY-NINTH SESSION

1909—1910

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PRESIDENT'S OFFICE.

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THE DEPARTMENT OF MEDICINE.

CALENDAR.

1909-1910.

1909.

September 15, *Wednesday.*—Fall Examinations in the Department of Medicine.

September 13-17, *Monday* to *Friday.*—Examinations for Admission.

September 29, *Wednesday.*—Academic Year begins in all Departments of the University.

October 20, *Wednesday.*—Fall Convocation.

November 25-27, *Thursday* to *Saturday,* both inclusive.—Thanksgiving Recess.

DECEMBER 22, 1909, TO JANUARY 1, 1910, BOTH INCLUSIVE. CHRISTMAS HOLIDAYS, RECESS.

1910.

January 2.—Instruction Resumed.

January 31, *Monday.*—Second Term begins.

February 22, *Tuesday.*—Winter Convocation.

February 22, *Tuesday.*—Annual Meeting of the Alumni Association.

March 25-28, *Friday* to *Monday,* both inclusive.—Easter Holidays.

June 1, *Wednesday.*—Examinations for Degrees Completed.

May 31-June 3, *Tuesday* to *Friday.*—Examinations for Admission.

June 5, *Sunday.*—Baccalaureate Sermon.

June 8, *Wednesday.*—University Commencement.

The Dean's office is in the Medical College Building, 1325 H St., N. W.

The Secretary and Treasurer's offices are in the Administration Building, corner 15th and H Sts., N. W.

For catalogue and general information, address THE DEAN OF THE MEDICAL DEPARTMENT, GEORGE WASHINGTON UNIVERSITY, WASHINGTON, D. C.

The
George Washington University

DEPARTMENT OF MEDICINE

THE COLLEGE OF MEDICINE
THE UNIVERSITY HOSPITAL AND DISPENSARY

ANNOUNCEMENTS
1909-1910

CATALOGUE
1908-1909

Published by the University, at Washington, D. C., June, 1909

The George Washington University.

CHARLES WILLIS NEEDHAM, LL.D., PRESIDENT.

The George Washington University, in the City of Washington, is chartered by act of Congress and consists of the following divisions:

The Faculty of Graduate Studies.
The College of Arts and Sciences.
The College of Engineering and Mechanic Arts.
The College of the Political Sciences.
The Teachers College.
The Division of Architecture.
The Department of Law.
The Department of Medicine.
The Department of Dentistry.
The College of Pharmacy.
The College of Veterinary Medicine.

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President of the University and *ex-officio* Member of the Board.

1910.

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EDWARD M. GALLAUDET, LL.D.
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EUGENE LEVERING.
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JOHN JOY EDSON, LL.B.

1911.

THOMAS H. ANDERSON.
JOHN B. LARNER, LL.D.
HENNEN JENNINGS, C.E.
HENRY B. F. MACFARLAND.

1912.

THEODORE W. NOYES, LL.M.
HENRY C. PERKINS.
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Department of Medicine.

FACULTY.

The names are arranged in the several groups in the order of assignment.

PRESIDENT OF THE UNIVERSITY.

CHARLES WILLIS NEEDHAM, LL.D.

J. FORD THOMPSON, M.D.,
Professor of Surgery, Emeritus.

PROFESSORS.

A. F. A. KING, A.M., M.D., LL.D.,
Professor of Obstetrics and Dean Emeritus of the Faculty.

Consulting Physician, Children's Hospital; *Obstetrician-in-Chief to The George Washington University Hospital and Dispensary.*

1315 Massachusetts Ave., N. W.

GEORGE NICHOLAS ACKER, A.M., M.D.,
Professor of Pediatrics and Clinical Professor of Medicine.

Physician to the Children's Hospital; Consulting Physician to the Episcopal Eye, Ear and Throat Hospital, to the Lutheran Infirmary, to the Casualty Hospital, and to the Eastern Dispensary; *Pediatrician-in-Chief to The George Washington University Hospital and Dispensary.*

913 15th St., N. W.

HENRY CRÈCY YARROW, M.D.,
Professor of Dermatology.

Consulting Physician to the Garfield Memorial Hospital and to the Children's Hospital; Visiting Physician to the Woman's Clinic; *Dermatologist-in-Chief to The George Washington University Hospital and Dispensary.*

814 17th St., N. W.

D. KERFOOT SHUTE, A.M., M.D.,
Professor of Anatomy and Clinical Professor of Ophthalmology.

Consulting Ophthalmologist, Government Hospital for the Insane; Ophthalmologist to Providence Hospital, Central Dispensary and Emergency Hospital, Columbia Hospital, and to the Washington Hospital for Foundlings; *Associate in Ophthalmology to The George Washington University Hospital and Dispensary.*

1719 De Sales St.

STERLING RUFFIN, M.D.,
Professor of Medicine.

Visiting Physician, Columbia Hospital for Women; Consulting Physician to the Central Dispensary and Emergency Hospital and to the Government Hospital for the Insane; *Physician-in-Chief to The George Washington University Hospital and Dispensary.*

1335 Connecticut Ave.

WILLIAM K. BUTLER, A.M., M.D.,

Professor of Ophthalmology.

Ophthalmologist to the Garfield Memorial Hospital; Surgeon-in-Charge, Lutheran Eye, Ear and Throat Infirmary; *Ophthalmologist-in-Chief to The George Washington University Hospital and Dispensary.*

1207 M St., N. W.

CHARLES E. MUNROE, S.B., PH.D.,

Professor of Chemistry.

President American Chemical Society, 1898; President Washington Chemical Society, 1895; Vice-President of the American Association for the Advancement of Science, 1888; Fellow of the Chemical Society of London and of the Chemical Geselleschaft, Berlin; etc., etc.

2115 S. St., N. W.

CHARLES WILLIAMSON RICHARDSON, M.D.,

Professor of Laryngology, Rhinology, and Otology.

Laryngologist to Providence Hospital, to the Episcopal Eye, Ear and Throat Hospital, and to the Washington Hospital for Foundlings; *Laryngologist-in-Chief to The George Washington University Hospital and Dispensary.*

1317 Connecticut Ave.

J. WESLEY BOVÉE, M.D.,

Professor of Gynecology.

Gynecologist to the Columbia Hospital for Women; Gynecological Surgeon, St. Elizabeth's Hospital for Insane; *Gynecologist-in-Chief to The George Washington University Hospital and Dispensary.*

The Rochambeau.

THOMAS A. CLAYTOR, M.D.,

Professor of Materia Medica and Therapeutics and Clinical Professor of Medicine.

Visiting Physician to the Garfield Memorial Hospital and to the Tuberculosis Hospital of the District of Columbia.

1315 New Hampshire Ave.

A. R. SHANDS, M.D.,

Professor of Orthopedic Surgery.

Orthopedic Surgeon to the Central Dispensary and Emergency Hospital; *Orthopedic Surgeon, The George Washington University Hospital and Dispensary.*

901 16th St., N. W.

FRANCIS R. HAGNER, M.D.,

Professor of Genito-Urinary Surgery and Venereal Diseases.

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1725 N St., N. W.

WILLIAM C. WOODWARD, LL.M., M.D.,

Professor of Medical Jurisprudence.

Health Officer, District of Columbia.

508 L St., N. W.

WILLIAM A. WHITE, M.D.,

Professor of Mental and Nervous Diseases.

Superintendent of the Government Hospital for the Insane, District of Columbia; Lecturer on Insanity, U. S. Army Medical School and U. S. Navy Medical School.

Government Hospital for the Insane.

I. W. BLACKBURN, M.D.,
Professor of Morbid Anatomy.
Pathologist to the Government Hospital for the Insane, District of Columbia.
Government Hospital for the Insane.

SHEPHERD IVORY FRANZ, A.B., PH.D.,
Professor of Physiology.
Psychologist to Government Hospital for the Insane; Research Assistant, Carnegie Institute, Washington, D. C.
Government Hospital for the Insane.

J. J. KINYOUN, M.D., PH.D.,
Professor of Pathology.
Pathologist, Department of Health, District of Columbia; *Pathologist-in-Chief to The George Washington University Hospital and Dispensary.*
1423 Clifton St.

WILLIAM CLINE BORDEN, M.D.,
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Lieut.-Colonel, Medical Corps, United States Army, Retired; *Surgeon-in-Chief to The George Washington University Hospital and Dispensary.*
1801 California St., N. W.

D. W. PRENTISS, M.D.,
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1315 M St., N. W.

HURON W. LAWSON, M.S., M.D.,
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1520 9th St., N. W.

ASSOCIATE PROFESSOR.

W. O. OWEN, M.D.,
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2123 18th St., N. W.

ASSISTANT PROFESSOR.

ISAAC KING PHELPS, PH.D.,
Assistant Professor of Physiological Chemistry.

CLINICAL PROFESSORS.

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Clinical Professor of Dermatology.
Dermatologist to the Garfield Memorial Hospital, the Providence Hospital, the Washington Hospital for Foundlings, the Central Dispensary and Emergency Hospital; *Assistant in Dermatology, The George Washington University Hospital and Dispensary.*
818 17th St., N. W.

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The Rochambeau.

ALBERT L. STAVELY, M.D.,
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1744 M St., N. W.

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Attending Surgeon to the Garfield Memorial Hospital and to the Women's Clinic.
3051 N St., N. W.

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1706 Rhode Island Ave., N. W.

ASSOCIATES.

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Associate in Medicine.
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1321 Rhode Island Ave.

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1527 I St., N. W.

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916 14th St., N. W.

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Associate in Obstetrics, Columbia Hospital for Women; *Associate in Obstetrics, The George Washington University Hospital and Dispensary.*
The Rochambeau.

CHARLES STANLEY WHITE, M.D.,
Associate in Surgery.
Associate in Surgery to the Central Dispensary and Emergency Hospital; *Associate in Surgery, The George Washington University Hospital and Dispensary.*
The Farragut.

H. H. DONNALLY, A.M., M.D.,

Associate in Medicine.

Attending Physician, Home for Incurables; *Associate in Medicine, The George Washington University Hospital and Dispensary.*

1018 14th St., N. W.

FRANK FREMONT-SMITH, M.D.,

Associate in Pediatrics.

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1731 H St., N. W.

WM. F. M. SOWERS, A.B., M.D.,

Associate in Surgery.

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1707 Massachusetts Ave.

G. BROWN MILLER, B.S., M.D.,

Associate in Gynecology.

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1731 H St., N. W.

B. M. RANDOLPH, M.D.,

Associate in Materia Medica and Therapeutics.

Attending Physician, Garfield Dispensary; Attending Physician, Tuberculosis Dispensary; *Assistant Physician, The George Washington University Dispensary.*

2010 R St., N. W.

HENRY R. ELLIOTT, M.D.,

Associate in Physiology and Pharmacology.

Physician to the Central Dispensary and Emergency Hospital; *Assistant in Genito-Urinary Surgery, The George Washington University Hospital and Dispensary.*

The Maury.

WILBUR R. BRANDENBURG, M.D.,

Associate in Bacteriology and Pathology.

2335 18th St., N. W.

CLINICAL ASSOCIATES.

LUTHER H. REICHELDERFER, M.D.,

Clinical Associate and Instructor in Surgery.

Attending Surgeon to the Garfield Memorial Hospital, and to the Hospital for Tuberculosis, District of Columbia.

1206 P St., N. W.

EDGAR P. COPELAND, M.D.,
Clinical Associate in Pediatrics.
Member of the Dispensary Staff of the Children's Hospital and of the Board of Medical Examiners of the District of Columbia; *Associate in Pediatrics, The George Washington University Hospital and Dispensary.*
The Rockingham.

DUFF G. LEWIS, M.D.,
Clinical Associate in Surgery.
1311 14th St., N. W.

JOHN T. KELLY, M.D.,
Clinical Associate in Surgery.
Gynecologist to Providence Hospital.
1312 15th St., N. W.

W. ASHBY FRANKLAND, M.D.,
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Gynecologist to the Casualty Hospital, and Eastern Dispensary.
1300 Massachusetts Ave., N. W.

NOBLE P. BARNES, M.D.,
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212 Maryland Ave., N. E.

INSTRUCTORS.

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The Burlington.

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Instructor in Obstetrics.
Assistant in Out-door Maternity Service, Eastern Dispensary and Casualty Hospital.
151 C St., N. E.

J. L. RIGGLES, M.D.,
Instructor in Anatomy and Gynecology.
Assistant Gynecologist, The George Washington University Dispensary.
1424 K St., N. W.

T. M. PRICE, Ph.D.,
Instructor in Biochemistry.
The Iowa.

O. D. SWETT, M.S.,
Instructor in Chemistry.
Chevy Chase, Md.

WALTER H. MERRILL, M.D.,
Instructor in Electro-Therapeutics.
Radiographer to the Garfield Memorial Hospital; *Radiographer to The George Washington University Hospital and Dispensary.*
1913 14th St., N. W.

O. A. M. McKIMMIE, M.D.,
Instructor in Laryngology and Otology.
Assistant Laryngologist, The George Washington University Hospital and Dispensary; Associate Physician, the Episcopal Eye, Ear and Throat Hospital.
1317 Rhode Island Ave., N. W.

H. S. DYE, M.D.,
Instructor in Laryngology and Otology.
Assistant in Laryngology, the Central Dispensary and Emergency Hospital; *Assistant Laryngologist, The George Washington University Hospital and Dispensary.*
1406 L St., N. W.

TRUMAN ABBE, M.D.,
Instructor in Physiology and Surgery.
Anæsthetist to the Columbia Hospital for Women.
1819 M St., N. W.

J. LAWN THOMPSON, M.D.,
Instructor in Surgery.
805 12th St., N. W.

W. W. WILKINSON, M.D.,
Instructor in Medicine.
Assistant Pathologist to the Garfield Memorial Hospital.
The Burlington.

CHARLES W. HYDE, M.D.,
Instructor in Medicine.
The Plymouth.

ARTHUR L. HUNT, M.D.,
Instructor in Surgery.
Assistant Surgeon, The George Washington University Dispensary.
The Burlington.

E. T. M. FRANKLIN, M.D.,
Instructor in Surgery.
1315 19th St., N. W.

W. J. FRENCH, M.D.,
Instructor in Pediatrics.
Assistant Pediatrician to the Central Dispensary and Emergency Hospital.
1736 18th St., N. W.

GEORGE B. HEINECKE, M.D.,
Instructor in Anatomy.
Brightwood, D. C.

E. P. MAGRUDER, M.D.,
Instructor in Anatomy.
Superintendent, Emergency Hospital.
The Ashley.

DANIEL T. BIRTWELL, M.D.,
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2719 14th St., N. W.

ADAM KEMBLE, M.D.,
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Assistant Gynecologist, The George Washington University Hospital.
The Cecil.

VERGIL B. JACKSON, M.D.,
Instructor in Anatomy and Gynecology.
Assistant Surgeon, Central Dispensary and Emergency Hospital.
The Brunswick.

SOTHORON KEY, M.D.,
Instructor in Medicine.
1716 H St., N. W.

H. G. FULLER, M.D.,
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Assistant, Genito-Urinary Service, The George Washington University Hospital and Dispensary.

C. S. BUTLER, M.D.,
Instructor in Bacteriology and Tropical Diseases,
U. S. Navy Medical School, 1333 Harvard St.

CLARA SOUTHMAYD LUDLOW, Ph.D.,
Instructor in Histology and Embryology,
Address G. W. U.

THE MEDICAL STAFF OF THE GEORGE WASHINGTON UNIVERSITY HOSPITAL AND DISPENSARY.

DIVISION OF MEDICINE.

General Medicine.

Sterling Ruffin, M.D	*Physician-in-Chief*
George N. Acker, M.D.,	*Associates*
Thomas A. Claytor, M.D.,	
H. H. Donnally, M.D.,	
B. M. Randolph, M.D.,	*Assistants*
W. A. Frankland, M.D.,	
W. C. Moore, M.D.,	
E. B. Jones, M.D.,	
F. E. Harrington, M.D.,	
C. B. Conklin, M.D.,	

Diseases of Children.

George N. Acker, M.D	Pediatrician-in-Chief
Frank Fremont-Smith, M.D., E. P. Copeland, M.D.,	Associates

Dermatology.

Henry C. Yarrow, M.D	Dermatologist-in-Chief
Randolph B. Carmichael, M.D	Associate

General Surgery.

W. C. Borden, M.D	Surgeon-in-Chief
C. S. White, M.D., John R. Wellington, M.D., W. F. M. Sowers, M.D., Arthur L. Hunt, M.D.,	Associates

Orthopedics.

A. R. Shands, M.D	Orthopedic Surgeon

Genito-Urinary Diseases.

Francis R. Hagner, M.D	Genito-Urinary Surgeon
Henry R. Elliott, M.D., Henry G. Fuller, M.D.,	Associates

Gynecology.

J. Wesley Bovée, M.D	Gynecologist-in-Chief
G. Brown Miller, M.D	Associate
D. W. Prentiss, M.D., J. L. Riggles, M.D., V. B. Jackson, M.D., Adam Kemble, M.D.,	Assistants

Obstetrics.

A. F. A. King, M.D	Obstetrician-in-Chief
E. E. Morse, M.D., J. M. Cabell, M.D.,	Associates

Ear, Throat and Nose.

Chas. W. Richardson, M.D	Laryngologist-in-Chief
O. A. M. McKimmie, M.D., H. S. Dye, M.D.,	Associates
C. L. Billard, M.D., Meade Moore, M.D.,	Assistants

Ophthalmology.

W. K. Butler, M.D	In Charge
D. Kerfoot Shute, M.D	Associate
E. G. Seibert, M.D	Assistant

Residents.

A. J. Browning, M.D.	*Senior Interne*
F. W. McKnight, M.D., W. R. Jobson, M.D., S. B. Pole, M.D.,	*Assistants*
L. L. Elliott, A. B. Dunn, G. P. Davis,	*Externs*
Miss Mary Belle Strubel	*Superintendent of Nurses*

GENERAL STATEMENT.

The **Department of Medicine of the George Washington University,** in the chronological order of establishment, is the seventeenth Medical School in the United States. The first course of lectures began in March, 1825. For many years the school was known as the National Medical College; subsequently as the Department of Medicine of the Columbian University. By virtue of an Act of Congress approved January 23, 1904, the Columbian University changed its name to "The George Washington University."

When first established, and for many years thereafter, this school, like most others in this country, gave only a two years' course of five months each. In 1878 the course was lengthened by the establishment of a Spring Session, devoted to lectures in certain special subjects. In 1879 the course was lengthened to seven months and attendance upon three annual sessions required and in 1893 attendance on four regular courses was made obligatory upon all candidates for the degree of Doctor of Medicine. In order to increase the facilities for actual bedside teaching, the University Hospital was established in 1898 and made a part of the Department of Medicine. In 1902 the old Medical College building, in which the exercises had been held since 1867, gave place to the present enlarged and commodious structure.

The Medical Department of the University has been for several years a member of the Association of American Medical Colleges, and its students and graduates have the advantages arising from such membership. Its curriculum, while including all the subjects required by the standard of the Association of Medical Colleges, gives more hours to each subject, and has additional subjects which are of the greatest value in thorough preparation for the profession of medicine.

BUILDINGS AND OTHER FACILITIES.

The **Buildings of the Medical Department** consist of the Medical College Building, the University Hospital and Dispensary, and necessary adjunct buildings. They are most advantageously situated in the heart of the city near both systems of car lines. The University Hospital adjoins the Medical College Building, thereby making its clinical facilities directly available in the College. The pathological material, and the material for clinical microscopy and clinical chemistry afforded by the Hospital and Dispensary, are directly used in the laboratories of the school.

The **Medical College Building** is a modern, commodious structure, with spacious, well-lighted, well-ventilated lecture rooms, and Histological, Bacteriological, Physiological, and Medical Laboratories.

The **Laboratories** are equipped with the most approved appliances, so that students may adequately pursue the laboratory courses and acquire the technical skill necessary in modern clinical and research methods. The dissecting-room is large, well-ventilated, and well-lighted by large skylights.

The **University Medical Library** is open for study and consultation from 9 a. m. to 9.00 p. m. It contains at present more than 1400 volumes, and provision is made in the annual library fee charged every student to add to it as published the important new works on medicine. It is an excellent working collection for the medical student, as it affords opportunity to adequately read up on the subjects presented in the courses.

The **Pathological Museum** contains a great many valuable and interesting specimens. Their number is increased by additions from time to time. These specimens are particularly valuable to the students as illustrating the changes produced by disease.

The **advantages of Washington** as a place for pursuing the study of medicine are many. This city now has over three hundred thousand inhabitants, providing abundant clinical material to the hospitals, which have an aggregate of over three thousand beds. In these hospitals clinical instruction, in addition to that given in the University Hospital, is given by members of the faculty.

The great libraries and museums connected with the various Government institutions afford unparalleled facilities for study.

The Library of the Surgeon General's office of the United States Army is the most complete medical library in the world. This library, as all other libraries of the Government, is open to the public between the hours of 9 a. m. and 4.30 p. m. There is also the Library of Congress and the many excellent libraries of the various other Government offices.

The Army Medical Museum affords an unrivaled opportunity for studying the conditions met with in military surgery. It contains on exhibition a collection of anatomical and pathological specimens unequalled by any other museum. Other Government museums are the Museum of Hygiene, in connection with the Medical Department of the Navy. The National Museum contains the most complete and best arranged collection of materia medica in the world. The drugs are shown in all their processes of manufacture. The Botanic Gardens, the Smithsonian Institution, the Fish Commission, the Department of Agriculture, all afford opportunities for study both in medicine and its collateral sciences.

On account of the many advantages offered in this city, the Army and Navy Medical Schools have been here located. The Alumni of this College is largely represented in all public services, and has been highly successful in passing the rigid examinations by them. Ten per cent of the total number of the regular medical corps of the United States Army are graduates of this College.

Aside from the special advantages offered for the study of medicine, the cosmopolitan character of the city of Washington, its climate (not excessively cold in winter), its beauty, and its interests, which, as it is the seat of the general government, are broad and national, make it an ideal place for the student to pass four years of preparation for the practice of a learned profession.

The **Academic Year** begins on the last Wednesday in September and ends on the second Wednesday in June. The next session, the eighty-ninth, begins September 29, 1909, and ends June 8, 1910.

Students must register promptly at the beginning of the session, in order that their time of study shall count as a full year.

Degrees are conferred at Commencement, the second Wednesday in June; at the Fall Convocation, the third Wednesday in October, and at the Winter Convocation, February 22.

ADMISSION.

Candidates for matriculation must show that they are fitted by previous education to study medicine. The requirements are those of the Association of American Medical Colleges and are as follows:

Candidates for matriculation must present creditable certificates of good moral character from two physicians in good standing.

The educational requirements for admission are those of the Association of Medical Colleges (equivalent to the 15 units of credit required for the College of Arts and Sciences), and are as follows:

Section 1. (a) A Bachelor's degree from an approved college or university.

(b) A diploma from an accredited high school, normal school, or academy requiring for admission evidence of the completion of an eight-year course in primary and intermediate grades; and for graduation not less than four years of study, embracing not less than two years (4 points) of foreign language, of which one must be Latin, two years (4 points) of mathematics, two years (4 points) of English, one year

(2 points) of history, two years (4 points) of laboratory science, and six years (12 points) of further credit in language, literature, history, or science.

(c) An examination in the following branches:

A. Required (18 points); Mathematics (4 points); English (4 points); History (2 points); Language (two must be Latin, 4 points); Science (taken from physics, chemistry, botany, zoölogy), 4 points.

B. Optional (to 12 points); English, 2 points; History, 6 points; Language, 6 points; Manual Training, 2 points; Mechanical Drawing, 1 point; Natural Science (botany, biology, and zoölogy), 2 points; Astronomy (1), Civics (1), Geology (1), Physical Geography (1), Physiology, and Hygiene (1), Political Economy (1).

(One point in any subject in a high school or academic course demands not less than five periods per week of forty-five minutes each for eighteen weeks.)

(d) Certificates from reputable instructors recognized by the State Board of Medical Examiners duly authorized by law or by the Superintendent of public instruction in States having no examining board may be accepted in lieu of any part of this examination.

Sec. 2. This examination must be conducted by or under the authority of the Board of Examiners or the Superintendent of public instruction of the city or State in which the college is located. In no case shall it be conducted by any person connected with the faculty, medical or otherwise, of the institution to which the student is seeking admission.

Sec. 3. A student may be allowed to enter on his medical work conditioned in not more than six points, and these conditions must be removed by satisfactory examination before he is allowed to enter on the second year of his medical course.

The examinations (c) are conducted by examiners appointed by the Superintendent of Schools of the District of Columbia.

As the laws relating to the preliminary educational qualifications required of students of medicine differ in many of the States of the Union, candidates are advised to make themselves familiar with the provisions of the medical statutes of the States in which they contemplate applying for license to practice. Attention to this precaution may save future embarrassment.

Examinations for admission to the first-year Medical class will be held in Hall No. 2 of the Medical Building, in accordance with the following schedules:

September 13, 10 a. m., English.
September 14, 10 a. m., Mathematics.
September 15, 10 a. m., Physics.
September 16, 10 a. m., Latin.
September 17, 10 a. m., Electives.

ADMISSION OF STUDENTS FROM OTHER SCHOOLS.

Students who have attended one or more terms at any other medical college in good standing will be admitted to advanced standing upon passing the examination required of students for the stage at which they propose to enter, or upon presenting certificates of examination covering courses equal to those in this College.

Students, approved by the Dean, not candidates for the degree of Doctor of Medicine, may be admitted as special students without examination to pursue any course they may elect.

SYSTEM OF INSTRUCTION.

The term of study for the degree of Doctor of Medicine consists of four years of eight months each.

Instruction is carried on by laboratory work, recitations, lectures, bedside instruction and hospital and dispensary clinics. Particular stress is laid upon laboratory work and clinical teaching. The clinics of the University Hospital and Dispensary are utilized to the fullest extent, as the Hospital and the Medical College are under the same control. Additional clinics are given in other hospitals in the city to which members of the faculty are attached.

While the greatest stress is laid upon laboratory work and the clinical teaching, it is recognized that the facts so obtained must be correlated and shown in their due relation to each other and to the science of medicine.

To this end didactic lectures are maintained in certain branches, as they have been found necessary to give a systematic and comprehensive idea of the larger subjects in medicine. These lectures are followed by systematic and thorough quizzes, so that it may be certain that the students properly and thoroughly grasp the ideas presented by the lecturers.

The recitation and quiz work is made so complete that students do not need to employ private quizmasters.

The object sought throughout the courses is to thoroughly ground the students in the knowledge which is necessary to the practitioner of medicine. No particular attempt is made to graduate specialists in any subject. It is believed that the four years allowed are no more than sufficient time for the adequate preparation of the general practitioner.

The policy adopted by the College is to give a comprehensive, well-graded and well-proportioned course; one that will adequately prepare the graduate to practice general medicine and meet the requirements of State Boards.

ORDER OF INSTRUCTION.

A general view of the subjects studied in each year are shown in the following table:

First Year.	Second Year.	Third Year.	Fourth Year.
Anatomy. Histology. Embryology. Physiology. General Chemistry.	Organic and Physiological Chemistry. Pathology. Bacteriology. Topographical Anatomy. Materia Medica. Pharmacology. Surgical Technique. Physical Diagnosis.	Practice. Surgery. Obstetrics. Therapeutics. Gynecology. Medical Jurisprudence. Clinical Microscopy. Clinics. Dietetics.	Clinical Medicine. Clinical Surgery. Clinical Obstetrics. Clinical Gynecology. Laryngology. Otology. Ophthalmology. Hygiene. Surgical Anatomy. Dermatology. Psychiatry. Pediatrics. Neurology. Tropical Diseases.

The greater part of the fourth year is devoted to clinical work in the hospitals. During this year, however, general instruction is also given in Mental Diseases, Neurology, Dermatology, Ophthalmology, Laryngology, and Otology. Not less than 1000 hours of clinical works are required.

CLASSIFICATION OF STUDENTS.

Students are divided into four classes, according to their proficiency, and the time spent, viz: first year, second year, third year, and fourth year. Students cannot advance to a higher class with more than one condition. Students failing in any subject or subjects may be permitted at the next examination period a re-examination in the subjects in which they fail. The Faculty may dismiss any student from the school, if in its judgment such student be deemed an unsuitable person, intellectually or otherwise for the profession of medicine.

Optional Five-Year Course.

Since the session of 1904-05 a five-year optional course has been offered for the benefit of students. In this course the subjects are arranged as follows:

First Year.	Second Year.	Third Year.	Fourth Year.	Fifth Year.
Anatomy. Histology. General Chemistry.	Physiological and Organic Chemistry. Physiology. Materia Medica. Pharmacology.	Bacteriology. Pathology. Hygiene. Therapeutics. Medical Jurisprudence. Clinical Microscopy. Physical Diagnosis.	Practice. Surgery. Obstetrics. Gynecology.	Clinical Medicine. Clinical Obstetrics. Clinical Surgery. Laryngology. Otology. Ophthalmology. Dermatology. Psychiatry. Pediatrics. Neurology. Tropical Diseases.

ANATOMY.

D. Kerfoot Shute, A.B., M.D.	Professor of Anatomy
W. O. Owen, M.D.	Associate Professor of Anatomy
S. H. Greene, Jr., M.D.	Instructor in Anatomy
J. L. Riggles, M.D.	Instructor in Anatomy
G. B. Heinecke, M.D.	Instructor in Anatomy
E. P. Magruder, M.D.	Instructor in Anatomy
D. T. Birtwell, M.D.	Instructor in Anatomy
Vergil B. Jackson, M.D.	Instructor in Anatomy
Presley Hunt, M.D.	Instructor in Anatomy

The first year course in Anatomy is given in a series of lectures, demonstrations, recitations from text-books, and practical laboratory work. The lectures are illustrated by lantern slides, models, and diagrams. The student is required to dissect satisfactorily the lateral half of a cadaver. Thoughout the course every opportunity is taken to emphasize the application of anatomy to the practice of medicine in all its departments.

Osteology and Syndesmology are taught by recitations and demonstrations at the beginning of the course, preparatory to the more advanced studies in Anatomy.

In the second year a course in Topographical Anatomy is given, in which recitations and laboratory demonstrations are used to thoroughly familiarize the student with the subject. In the fourth year a course in operative surgery on the cadaver, and general surgical anatomy, is given in connection with the course in surgery. In this way a thorough preparation in general and applied anatomy is given.

Text-books: Gray's Anatomy, Cunningham's Text-book of Anatomy, Cunningham's Manual of Practical Anatomy.

Collateral reading: Quain's Anatomy, Spalteholz's Anatomy, Piersol's Anatomy, Taylor's Applied Anatomy, Wiedersheim's Structure of Man, Morris' Anatomy.

HISTOLOGY AND EMBRYOLOGY.

H. W. Lawson, M.S., M.D.	Professor of Histology and Embryology
E. B. Jones, M.D.	Instructor
Clara S. Ludlow, Ph.D.	Instructor

Instruction is given in the care and use of the microscope and in the preparation of tissues for microscopical examination, and a systematic study is made of the minute structure of the tissues and organs of the body, the laboratory work being supplemented by lectures and recitations.

A combined lecture, recitation, and laboratory course is given in embryology. The written and oral examinations at the end cover both subjects.

Text-books: Böhm, Davidoff, and Huber's Histology, Bryce's Embryology.

Collateral reading: Nichol's Histology, Stöhr's Histology, Bailey and Miller's Embryology.

PHYSIOLOGY.

Shepherd Ivory Franz, Ph.D.	Professor of Physiology
H. C. Elliott, M.D.	Associate in Physiology
Truman Abbe, M.D.	Instructor in Physiology

The course in Physiology consists of lectures, recitations, conferences, demonstrations, and laboratory exercises, during the second half of the first year. The lectures cover all the important facts and theories regarding bodily functions, and are illustrated by diagrams, models, and prepared specimens. Recitations are held on assigned parts of the text-book. Conferences are held on special physiological topics, and for these exercises each student is required to prepare one thesis during the semester. In the laboratory each student performs a number of experiments on blood, on the circulation, on digestion, on the general functions of muscle and nerve, on the nervous system, and on the special senses. The student is required to make and keep records of the experiments, and these are criticised by the instructors. The class is divided into sections so that each student receives a large amount of personal attention. In the second year a series of exercises is held in which special emphasis is laid on the relation of normal physiological function to the disturbances of function in disease, and upon the physiological action of drugs. It is intended in this way to bring the work of the Physiological Laboratory and other exercises into closer relation with the succeeding courses in Pathology, Therapeutics, and General Medicine.

Text-books: Tigerstedt's Physiology; Howell's Physiology.

Collateral reading: Schafer's Physiology, Landois' Physiology, American Text-book of Physiology, Stewart's Physiology.

CHEMISTRY.

Charles E. Munroe, Ph.D....Professor of Chemistry and Toxicology
I. K. Phelps, Ph.D.......Assistant Professor Physiological Chemistry
Edward G. Seibert, M.D....Associate in Chemistry and Instructor in Ophthalmology
Thomas M. Price, Ph.D..................Instructor in Biochemistry
Otis D. Swett, B.S.........................Instructor in Chemistry

General Chemistry. A series of illustrated lectures accompanied by recitations, laboratory work, and exercises, on theoretical, inorganic, organic, and technical chemistry.

Organic Chemistry. A series of lectures, laboratory work, and recitations on the acyclic and cyclic hydrocarbons and their derivatives, with special reference to physiology and medicine.

Physiological Chemistry. A series of lectures, laboratory work, and recitations on the proximate principles of the human body.

Biochemistry. A laboratory course in the chemical examination of some of the chief foodstuffs, the tissues and fluids of the body, and the products of certain organisms; also the isolation of the digestive enzymes and a study of their action *in vito.* Dr. Price.

Clinical Chemistry. A thorough course is given in which material from the University Hospital and Dispensary is utilized to show the practical application of this subject in medicine.

Text-books: Holland's Medical Chemistry and Toxicology, Long's Text-book of Physiological Chemistry, Platt's Manual of Qualitative Analysis and Medical Chemistry.

Collateral reading: Simon's Manual of Chemistry, Hammarsten's Physiological Chemistry, Richter's Organic Chemistry, Barker's Text-book of Elementary Chemistry.

MATERIA MEDICA AND THERAPEUTICS.

Thomas A. Claytor, M.D.	Professor of Materia Medica and Therapeutics
Noble P. Barnes, M.D.	Instructor in Materia Medica
Walter H. Merrill, M.D.	Instructor in Electro-Therapeutics
B. M. Randolph	Instructor in Pharmacology

Second year. (1) Lectures upon Materia Medica, including a demonstration of drugs and their preparations. (2) Recitations upon the preparations, their doses, and the various antidotes for poisons. (3) Practical exercises in prescription writing. (4) Demonstrations in the drugs. (5) An optional course in Pharmacy is offered.

Third year. (1) Systematic lectures upon the physiological action of drugs and their effects in health and disease, their therapeutic uses, and their methods of administration. (2) Lectures and section demonstrations in electro-therapeutics. (3) Prescription writing, in which the students are given hypothetical cases for which to prescribe, the prescriptions being reported before the class for criticism and discussion.

Collateral reading: Hare's Practical Therapeutics, Culbreth's Materia Medica and Pharmacy, Cushney's Pharmacology, Osborne's Introduction to Pharmacology and Medicine, Sollman's Text-book of Pharmacology, Forcheimer's Prophylaxis and Treatment of Internal Disease.

DIETETICS.

J. B. Nichols, M.D.	Associate in Medicine

A course of lectures and quizzes on the principles of feeding in health and disease.

PATHOLOGY AND BACTERIOLOGY.

Joseph J. Kinyoun, M.D, Ph.D.	Professor of Bacteriology and Pathology
Wilbur R. Brandenburg, M.D.	Associate in Bacteriology and Pathology
Arthur L. Hunt, M.D.	Instructor in Bacteriology and Pathology

Bacteriology. The first part of the session is devoted to a laboratory course of instruction in the fundamental principles and methods of pure bacteriology. A thorough drilling is given in the preparation of culture media, in sterilization and disinfection, staining, and in the several methods of differentiating bacteria. The course will continue over six weeks.

Pathology. The course in Pathology will be given in the second and third years, and will comprise in general, special pathology, and clinical microscopy. The second year will be devoted to the study of the principles of general pathology and of the several processes observed in disease. Post-mortem examinations will be utilized when possible. Coincidentally with the above will be included the study of the principal pathogenic bacteria: the principles of immunity and serum therapy.

During the third year will be given a course of instruction in special pathology, which will include the study of those processes requiring surgical relief; the healing of wounds and other injuries; of special diseases, neoplasms, and problems of experimental pathology.

The course in Clinical Microscopy will comprise the study and examination of various tissues, fluids, and material from the standpoint of diagnosis.

Text-books: Bacteriology, Jordan; Pathology, Delafield and Prudden.

Collateral reading: Ziegler's Pathological Anatomy, Adami's Pathology, Park's Pathogenic Bacteria and Clinical Diagnosis, Simon and Von Jasch.

MORBID ANATOMY.

I. W. Blackburn, M.D................Professor of Morbid Anatomy

The instruction in this course is mainly practical, consisting of post-mortem examinations, demonstrations, and illustrative lectures pertaining to the subjects of morbid anatomy and special pathology. Especial attention is paid to the study of the gross pathology of diseases of the brain and nervous system. Instruction in the technique of post-mortem examinations for scientific purposes and in medico-legal cases is a feature of the course.

MEDICINE.

Sterling Ruffin, M.D........................Professor of Medicine
Geo. N. Acker, A.M., M.D............Clinical Professor of Medicine
Thos. A. Claytor, M.D..............Clinical Professor of Medicine
William A. White, M.D..Professor of Mental and Nervous Diseases
J. B. Nichols, M.D...........................Associate in Medicine
H. H. Donnally, A.M., M.D..................Associate in Medicine
W. W. Wilkinson, M.D.....................Instructor in Medicine
Charles W. Hyde, M.D.....................Instructor in Medicine
Sothoron Key, M.D.........................Instructor in Medicine

Instruction in Medicine is so given as to conform to the most modern requirements. The work begins in the second year with a complete course in history-taking and normal physical diagnosis, and is continued through the third and fourth years. During the latter two years the course consists of lectures, recitations, a study of case histories, clinical conferences, and practical work in the clinical laboratory and at the bedside. The work is made as practical as possible.

The third-year class is divided into small sections which are required to attend the daily dispensary service in the University Hospital, where they are drilled especially in history-taking and in the technique of practical physical diagnosis.

The fourth-year class is similarly divided into small sections, and these are required to attend the daily ward clinics in the University Hospital and ward clinics in the Garfield Memorial Hospitals, Children's Hospital, and the Tuberculosis Hospital of the District of Columbia.

The system of ward clinics to small groups of students affords a most effective method of studying disease and gives to every student an opportunity of following a large assortment of diseases from their commencement to the termination of illness: in no other way is it possible to get a more practical knowledge of the methods of studying disease or a more intimate knowledge of disease itself.

Every patient in the medical wards of the University Hospital is assigned to two senior students, who are required (under proper supervision) to take the history, to make and record a complete physical examination, to determine after due study the nature of the illness (diagnosis), to outline a plan of treatment, and to make daily notes of the progress of the case.

A weekly amphitheater clinic is given to third-year students in a body and a similar clinic to the fourth-year class. A series of special neurological clinics is provided for the senior class at the Government Hospital for the Insane, where there is a great wealth of material.

Text-books and works of reference: Osler's, Tyson's or Anders' Practice of Medicine; Manson's Tropical Diseases; Church and Peterson's Nervous and Mental Diseases; Cabot's Physical Diagnosis; Brown and Ritchie's Medical Diagnosis; Sahli's Diagnostic Methods; Simon's or Boston's Clinical Diagnosis; Cabot's Clinical Examination of the Blood; Osler's Modern Medicine; Nothnagel's Encyclopedia of Practical Medicine.

TROPICAL MEDICINE.

C. S. Butler, M.D., Surgeon U. S. Navy....Instructor in Bacteriology and Tropical Diseases, U. S. Navy Medical School

The course in tropical diseases is similar to that given in the Army and Navy Medical Schools, and consists of didactic lectures, quizzes, and laboratory instruction, with particular reference to the parasitic, protozoal diseases common in the tropics and in the southern part of the United States.

Text-book: Manson's Tropical Diseases.

MENTAL DISEASES.

William A. White, M.D. .... Professor of Mental Diseases

A series of lectures and clinics is given upon the subject of insanity in its various forms.

Many of these clinics are given at the Government Hospital for the Insane, which, with its more than two thousand beds, affords one of the largest clinics in this country.

Text-book: White's Outlines of Psychiatry.

Collateral reading: Paton's Psychiatry; Kraepelin's Clinical Psychiatry.

PEDIATRICS.

George N. Acker, A.M., M.D. .... Professor of Pediatrics
Frank Fremont-Smith, M.D. .... Associate in Pediatrics
Edgar P. Copeland .... Associate in Pediatrics

Didactic and clinical lectures are given upon diseases of infants and children and the importance of the proper management of these diseases by diet and hygiene.

The children's clinic, at the Children's Hospital, affords ample material for practical teaching in this branch.

DERMATOLOGY.

H. C. Yarrow, M.D. .... Professor of Dermatology
R. B. Carmichael, M.D. .... Clinical Professor of Dermatology

The lectures on this subject are illustrated by diagrams, models, photographic illustrations of disease from life, and also by the exhibition of cases. In connection with the course clinical instruction is given.

Text-book: Jackson's Diseases of the Skin.

PHYSICAL DIAGNOSIS.

W. W. Wilkinson, M.D. .... Associate in Medicine

A complete course is given in this subject by means of recitations, section work on normal subjects, and with clinical cases which typically represent diseased conditions.

The text-books are those given under the general subject of medicine.

SURGERY.

William Cline Borden, M.D. .... Professor of Surgery
John Van Rensselaer, A.B., M.D. ...... Clinical Professor of Surgery
A. R. Shands, M.D. .... Professor of Orthopedic Surgery
Arthur A. Snyder, M.D. .... Clinical Professor of Surgery

Francis R. Hagner, M.D.	Professor of Genito-Urinary Surgery
John R. Wellington, M.D.	Clinical Professor of Surgery
Charles S. White, M.D.	Associate in Surgery
W. F. M. Sowers, A.B., M.D.	Associate in Surgery
H. W. Lawson, M.D.	Associate in Surgery
L. H. Reichelderfer	Clinical Associate in Surgery
Duff G. Lewis	Clinical Associate in Surgery
John T. Kelly	Clinical Associate in Surgery
J. Lawn Thompson, M.D.	Instructor in Surgery
A. L. Hunt, M.D.	Instructor in Surgery
E. T. M. Franklin, M.D.	Assistant in Surgery
L. M. Hynson, M.D.	Assistant in Surgery

The principles of surgery are presented in a systematic course of lectures, so that the student may obtain a comprehensive and adequate concept of the science and art of surgery. These lectures are followed by recitations held twice a week, so that the subject-matter may be thoroughly impressed upon the students. The special divisions of surgery are taught by associates and instructors who have made specialties of these branches. The clinical material in the University Hospital and Dispensary, being under the control of the faculty, is directly used throughout the course to illustrate the subjects taught and to familiarize the students with actual clinical conditions.

Surgical technique is taught by instruction in the preparation of materials used in antiseptic and aseptic surgery, the preparation of the patient, and the sterilization of instruments. Practical instruction is given in the Hospital and Dispensary in the application of splints. bandages, and dressings used in the various surgical diseases and injuries. Thorough instruction and practical demonstrations are given in the administration of anæsthetics. Surgical pathology is taught by thorough instruction in the gross and microscopic appearance of surgical diseases and injuries, and by a systematic course of lectures and quizzes by which the etiology, pathology, symptomatology, and treatment of the surgical affections and their relations to each other are shown.

Clinical teaching is carried on in the University Hospital and Dispensary, and in other hospitals of the city to which members of the faculty are attached. Amphitheater clinics are given, in which the general practice of surgical diagnosis and operative technique and therapeutic procedure are shown.

Ward clinics and bedside instruction are made a prominent part of the course. The class is divided into sections, which are regularly assigned to clinical work in the University Hospital and Dispensary, and in other hospitals. Students are assigned to work in the surgical outpatient departments of the different hospitals, and practical work is required of each student in the preparation of dressings, sterilization of instruments, etc.

In the fourth year a thorough course is given in surgical anatomy and operative surgery of the cadaver, in connection with which the instructor takes up a general review of anatomy, so that the student may be thoroughly prepared for State Board examinations for graduation.

Orthopedics. A course of lectures and recitations on the pathology, etiology, course, termination, and treatment of chronic joint diseases, with clinical instruction in the application of special apparatus and of plaster of paris to the correction of deformities.

Instruction in genito-urinary surgery and in cystoscopy is given in clinics in section work and by recitations from text-book.

OBSTETRICS.

A. F. A. King, A.M., M.D., LL.D.	Professor of Obstetrics, Dean Emeritus
Edward E. Morse, M.D.	Associate in Obstetrics
Julian M. Cabell, M.D.	Associate in Obstetrics
H. S. Medford, M.D.	Instructor in Obstetrics

The course in Obstetrics comprises a series of lectures on the science and art of midwifery, together with practical work. The chief purpose of the lecturer is to arrange, simplify, and explain the matters studied in the text-books so as to render them more easily intelligible and to indicate their relative importance. The lectures are illustrated by diagrams, models, manikins, natural preparations, and instruments. The class is divided into sections, and each student performs various obstetrical operations upon the manikin and receives practical instruction in external pelvimetry and the methods of abdominal palpation and ausculation during pregnancy. Recitations from text-books are held throughout the term. In the fourth year clinical instruction in obstetrics is given, the class being divided into small sections and each section being required to attend a stated number of cases.

Text-book: King's Manual of Obstetrics.

Collateral reading: Hirst's Obstetrics, Williams' Obstetrics, Jewett's Practice of Obstetrics.

GYNECOLOGY.

J. Wesley Bovée, M.D.	Professor of Gynecology
G. Brown Miller, M.D.	Associate in Gynecology
A. L. Stavely, M.D.	Clinical Professor of Gynecology
W. A. Frankland, M.D.	Instructor in Clinical Gynecology
J. Lewis Riggles, M.D.	Instructor in Gynecology

Gynecology as taught in the third year comprises a course of lectures and text-book recitations. In the fourth year the class is taken in sections of one to two students each into the Gynecological Dispensaries for clinical instruction in examinations, diagnosis, and treatment. In larger sections the class attends amphitheater clinics given by the Professors of Gynecology and Clinical Gynecology.

Text-books: Bovee's Practice of Gynecology, Hirst's Diseases of Women.

Collateral reading: Dudley's Gynecology, Penrose's Diseases of Women, Ashton's Practice of Gynecology, Montgomery's Text-book of Gynecology, Findley's Medical Gynecology.

LARYNGOLOGY AND OTOLOGY.

Charles W. Richardson, M.D.	Professor of Laryngology and Otology
O. A. M. McKimmie, M.D.	Instructor in Laryngology and Otology
H. S. Dye, M.D.	Instructor in Laryngology and Otology

This course comprises lectures and clinical instruction on diseases of the nasal passages, pharynx, larynx, and also the ear. Practical demonstrations are given in the use of the laryngoscope and other instruments required in these special branches.

Text-books: Kyle's Diseases of the Nose and Throat, Dench's Diseases of the ear.

OPHTHALMOLOGY.

D. Kerfoot Shute, A.B., M.D.	Associate Professor of Ophthalmology
W. K. Butler, M.D.	Associate Professor of Ophthalmology
E. G. Seibert	Instructor in Ophthalmology

The course of lectures on this subject is to direct attention to the elementary principles of the subject. It is not intended to qualify the student as a specialist, but to give him a knowledge of what every general practitioner ought to know. The course is supplemented by clinical instruction.

Text-books: May's Diseases of the Eye, Fuch's Diseases of the Eye, Ball's Diseases of the Eye.

HYGIENE.

D. W. Prentiss, M.D.	Professor of Hygiene

The course in Hygiene is given principally by recitation from a prescribed text-book. Consideration is given to domestic and municipal sanitation and to the principles underlying legislative interference in matters of public health.

Text-book: Harrington's Hygiene.

Collateral reading: Notter and Firth's Hygiene.

MEDICAL JURISPRUDENCE.

W. C. WOODWARD, M.D. .... Professor of Medical Jurisprudence

This course is designed to familiarize students with the rights and obligations of physicians, both legal and ethical, and to qualify them to apply the facts of medical science to the solution of problems in law.

Text-book: Reese's Medical Jurisprudence and Toxicology.

CLINICAL FACILITIES.

The following hospitals are open to the students of this school for clinical study, and are extensively used for that purpose:

University Hospital, H St., between Thirteenth and Fourteenth Sts., N. W., and adjacent to the Medical Building.—This hospital is a part of the educational equipment of this University, and is used primarily in instructing the students in clinical medicine, surgery, and obstetrics. It has also in connection with it an out-patient or dispensary service in all departments.

The staff is composed of Members of the Faculty of Medicine.

Garfield Memorial Hospital, Florida Ave. and Tenth St., N. W.—This institution has 118 charity beds. Clinics are given regularly throughout the session by members of the Faculty connected with the visiting staff of the hospital. There is also an out-patient department, giving good opportunities for experience in the practice of physical diagnosis.

Members of the Faculty on the visiting staff: Professor CLAYTOR, Clinical Medicine; Professors VAN RENSSELAER, SNYDER, WELLINGTON and REICHELDERFER, Clinical Surgery; Professor STAVELY, Clinical Gynecology; Professor CARMICHAEL, Clinical Dermatology; Professors SHUTE and BUTLER, Clinical Ophthalmology; Professor HAGNER, Clinical Genito-Urinary Surgery; Professor YARROW and Dr. FREMONT-SMITH, Consulting Physicians.

Children's Hospital, W St., between Twelfth and Thirteenth Sts., N. W.—Regular clinical instruction is given in the medical and surgical wards by members of the Faculty on the visiting staff of the hospital. This institution has 100 charity beds. There is also a large out-patient department.

Members of the Faculty on the visiting staff: Professors KING and YARROW, Consulting Physicians; Professor WELLINGTON, Clinical Surgery; Professor ACKER and Drs. COPELAND and FREMONT-SMITH, Clinical Medicine.

Emergency Hospital and Central Dispensary, Fifteenth St., and Ohio Ave., N. W.—This hospital has 36 charity beds, and has a very large out-patient service. The large emergency service gives exceptional facilities in clinical surgery.

Members of the Faculty on the visiting staff: Professor HAGNER, Clinical Genito-Urinary Diseases; Professor RUFFIN, Consulting Physician; Drs. WHITE and JACKSON, Surgery; Dr. ELLIOTT, Clinical Medicine; Professor CARMICHAEL, Clinical Dermatology; Dr. MILLER, Clinical Gynecology; Professor SHANDS, Orthopedics; Professor SHUTE, Ophthalmology; Dr. FRENCH, Pediatrics.

Columbia Hospital for Women, Twenty-fifth St. and Pennsylvania Ave., N. W.—This hospital has 68 charity beds for diseases peculiar to women and 50 charity maternity beds. Both the obstetrical and the gynecological services are particularly good.

Members of the Faculty on the visiting staff: Professor BOVEE and Dr. MILLER, Clinical Gynecology; Drs. MORSE and CABELL, Clinical Obstetrics; Professor SHUTE, Ophthalmology; Professor RUFFIN, Visiting Physician.

Providence Hospital, Second and D Sts., S. E.—This institution has a large charity service—100 beds for medical and surgical cases and 30 maternity beds.

Members of the Faculty on the visiting staff: Professor RICHARDSON, Clinical Laryngology and Otology; Professor SHUTE, Clinical Ophthalmology; Dr. SOWERS, Clinical Surgery; Professor CARMICHAEL, Dermatology; Dr. MORSE, Obstetrics.

The Government Hospital for the Insane.—This hospital is maintained by the United States Government. It has 2500 beds. Clinical instruction in mental diseases is given by the superintendent of the hospital, Professor W. A. WHITE. Other members of the Faculty on service at this hospital are Professors FRANZ and BLACKBURN; Professor SHUTE, Consulting Ophthalmologist; Professor RUFFIN, Consulting Physician.

Episcopal Eye, Eear, Throat, and Nose Hospital, Fifteenth St., between L and M Sts., N. W.—Excellent opportunities for clinical instruction in ophthalmology, otology, laryngology, and rhinology are offered by this hospital.

Members of the Faculty on its staff: Professor RICHARDSON, Clinical Otology and Laryngology; Drs. MCKIMMIE and DYE, Clinical Otology and Laryngology; Professor ACKER, Consulting Physician.

Lutheran Dispensary, Fourteenth and N Sts., N. W.—This dispensary affords good opportunities for clinical study of diseases of the eye, ear, throat, and nose.

Members of the Faculty on its staff: Professor Butler, Surgeon-in-Charge; Dr. Seibert, Ophthalmology; Professor Acker, Consulting Physician.

Casualty Hospital, 708 Massachusetts Ave., N. E.—Opportunities in emergency and dispensary work are offered by this institution.

Members of the Faculty on its staff: Professor Acker, Consulting Physician; Dr. Barnes, Clinical Medicine; Dr. Medford, Obstetrics.

Woman's Clinic, 1237 T St., N. W.—Members of the Faculty on its staff: Professor Yarrow, Consulting Physician; Professor Snyder, Attending Surgeon.

Tuberculosis Hospital, 14th and Upshur Sts., N. W.—Members of the Faculty on its staff: Professor Claytor and Dr. Randolph, Clinical Medicine; Professor Kinyoun, Pathology; Dr. Reichelderfer, Clinical Surgery; Professor Richardson, Ophthalmology.

EXAMINATIONS.

Examinations are held at the end of the course in each subject. Students failing in examination will be permitted to be re-examined at the next regular examination period. Students failing in re-examination must repeat the subjects in which they do not attain a grade of 85 or more. Students failing to appear at the regular examinations will not be examined until the next regular examination, except by special permission of the Faculty, and in this event an extra fee of $5.00 will be charged. Students failing to pass satisfactorily their practical laboratory examinations will be required to repeat the laboratory courses and pay the regular laboratory fees. Students will not be admitted to examination unless they have paid all fees due at the time or present a permit signed by the Treasurer. In order to avail themselves of the privilege of re-examination students must file their applications with the Dean not later than fifteen days before the date set for the examinations.

In addition to the foregoing examinations students are required: To dissect satisfactorily one lateral half of a cadaver; to report satisfactorily an analysis of specimen of urine and a clinical examination of a specimen of blood; to examine and report upon six clinical cases in general medicine and two cases in surgery; to perform satisfactorily two major surgical operations upon the cadaver;

to work not less than two weeks in the Dispensary Service of the University or other hospitals; to work not less than two weeks in the Clinical Laboratory of the University or of some other hospital approved by the Dean; to take charge of one or more obstetrical cases and to report thereon; to examine and report on one case in either ophthalmology, laryngology, otology, dermatology, or orthopedics; to report upon one case in gynecology.

Proficiency is marked upon a scale of 100. A grade of 75 is required to pass an examination.

Students do not receive their numerical grades, but are notified that they have attained grades A, B, C, D, E, or F, as the case may be. A signifies 96 to 100; B signifies 90 to 95; C signifies 85 to 89; D signifies 75 to 84; E signifies failure; F signifies failure to appear for examination.

REQUIREMENTS FOR DEGREES.

Every candidate for the degree of Doctor of Medicine must be at least twenty-one years of age and of reputable character. He must have complied with the admission examination and other requirements herein set forth. He must file with the Dean, at least 30 days before the dates fixed for conferring of degrees, a notice of his intention to appear for graduation, and he must be present at the time specified for examination, and also at Commencement or Convocation. The degree is not conferred in the absence of a candidate except by special consent of the President's Council. Graduates of other accredited colleges must spend one year in residence at this school.

To be eligible for graduation the candidate must pass all his examinations.

Candidates who in their work and examinations attain general averages of 90 or more will be presented to the Faculty for consideration with reference to being designated as "having graduated with distinction." If in the opinion of the Faculty such candidates have shown themselves to be possessed of more than ordinary merit, they will have inscribed upon their diplomas beneath their degree the words "with distinction," and the names of such graduates will be distinctly printed at the head of the list of graduates of the year.

Candidates who have completed their courses, but have not passed their final examinations, may take the fall or the winter re-examinations upon payment of a fee of $10, and, if successful, receive their diplomas at the Fall or Winter Convocation, as the case may be, upon the payment of the diploma fee.

A student who has failed of graduation after repeating his final year will not be permitted to maintain his connection with the school.

SCHOLARSHIPS.

Eight scholarships are provided for students.

Corcoran Scholarships.—In recognition of the liberality of the late W. W. Corcoran, the University has established in this department six free scholarships.

Two of these scholarships are open for competitive examination to the graduates of the several high schools of the District of Columbia and are awarded to the two students whose averages are highest.

Two scholarships are open for competitive examination to graduates of any reputable high school or college who shall give satisfactory written evidence of pecuniary inability and certificates of good moral character and industry. These two scholarships are awarded to the two graduates whose averages are highest.

The remaining two scholarships are open for competitive examination to students who, though not graduates of any high school or college, give satisfactory evidence that they are fitted by previous education for the study of medicine, and at the same time give satisfactory written evidence of pecuniary inability and certificates of good moral character and industry. These two scholarships are awarded to the two students whose averages are highest.

In establishing these averages professional aptitude and general qualifications are considered along with scholastic ability.

Medical Missionary Scholarships.—Two Medical Missionary Scholarships will be given to such applicants as are judged by the President of the University best qualified to enter upon the study of medicine for the purpose of becoming medical missionaries. These scholarships are awarded for one year only, but they may be renewed.

Applications for scholarships should be filed with the Dean not later than September 10. Students holding scholarships pay the matriculation, library, laboratory, and graduation fees, and make the deposit to cover breakage. Holders of scholarships must also maintain a satisfactory scholastic average.

PRIZES.

A general examination prize of $50 is annually awarded to the candidate for graduation who attains the highest average grade in all subjects.

Professor H. C. Yarrow gives a prize for the best examination in Dermatology.

Professor Charles W. Richardson gives a prize for the best examination in Laryngology and Otology.

Professor Acker gives a prize for the best examination in Pediatrics.

Professor BUTLER gives a prize for the best examination in Ophthalmology.

Professor HAGNER gives a prize for the best examination in Genito-Urinary Diseases.

HOSPITAL APPOINTMENTS.

The interns are annually appointed in the University Hospital. They are appointed from graduates who have served as externs. Seven externs are also appointed from graduates and from the fourth-year class. These appointments are made upon competitive examinations under conditions determined by the governing authorities of the Hospital. Appointments to similar positions are open to the graduates and undergraduates of this school in the following other hospitals of the city: Garfield Memorial Hospital, Emergency Hospital, Columbia Hospital for Women, Casualty Hospital, Providence Hospital, Washington Asylum Hospital, Children's Hospital, Episcopal Eye, Ear, Throat, and Nose Hospital.

FEES AND CONTINGENT EXPENSES.

1. Matriculation fee (payable once)	$5
2. Annual library fee	2
3. Tuition fee per annum, including all charges for materials	150
4. Late registration fee in the case of students registering for the first term after October 20, or for the second term after February 20, excepting for courses which do not begin with the terms	2
5. Fee for graduation	10
6. Tuition fee per annum for any year repeated once, or for a fifth year	75
In addition to the tuition fees for special or repeated laboratory courses, a charge will be made for materials used.	
7. Fee for a certificate under the seal of the University	2
8. Auditors are admitted to lecture courses for the regular tuition fees, but are not permitted to take active part in the work of the classes, and will not be allowed credit, in a subsequent course of studies leading to a degree, for attendance as auditors. No matriculation or library fee is charged.	

No change will be made in the fees fixed at registration except in case of withdrawal, and then only upon notice in due form, and from the end of the current quarter session, when such withdrawal shall be approved. Applications for the granting of a withdrawal should be made on the prescribed form to be obtained from the Secretary, and will be received only at the end of a quarter session.

Students are urged to purchase their own microscopes, but those who do not care to do so may rent them from the University at the following rates:

Microscope for Histological Laboratory use	$3
Microscope for Bacteriological, Pathological, and Clinical Microscopy Laboratory use	5

PAYMENT OF FEES.

All fees are to be paid to the Treasurer. Tuition fees are payable quarterly, in advance. Matriculation, library, and laboratory fees are payable in full, in advance.

WITHDRAWALS.

A certificate of work actually done will be given to any student wishing to withdraw or transfer to some other school during the session. Written notice of such withdrawal or transfer must be filed with the Dean at the time of requesting the certificate, and the student must have paid all fees and dues chargeable against him up to the end of the quarter in which he withdraws.

COMMITTEE ON EMPLOYMENT FOR STUDENTS.

Chairman.

THE SECRETARY OF THE UNIVERSITY.

DEAN WILBUR,
PROFESSOR HENNING,
DEAN HODGKINS,
PROFESSOR HOUGH.

The purpose of this Committee is to aid students, especially those coming from a distance, to obtain suitable employment as a means of defraying a part or all of their expenses while in pursuit of their college course. Opportunities for such employment in Washington are exceptionally good. The many Departments of Government, the Library of Congress, Congressmen's secretaryships, law offices, contractors' and architects' offices, night schools, journalism, stenography, etc., offer a large number of positions of the most diverse kinds. While the Committee must not be understood as in any sense engaging to find employment for prospective students, in a great many cases important assistance can be rendered duly qualified applicants, if the fact of their desire to obtain employment is known. Applicants are particularly cautioned against coming to the University, intending to depend upon outside employment for support, without being provided with funds sufficient to meet the expenses of at least the first half year. Communications should be addressed to the

Committee on Employment for Students,
The George Washington University,
Washington, D. C.

BOARD AND ROOMS.

A register of approved boarding houses is kept by the Treasurer. Accommodations cost from $25 to $40 a month.

For catalogues, application blanks, and further information, address

THE DEAN,
Department of Medicine,
The George Washington University,
1325 H St., N. W., Washington, D. C.

Students.

DOCTOR OF MEDICINE.

First Year.

Name.	Legal residence.	City address.
Borden, Daniel Le Ray	D. C.	Conduit Road.
Bricker, Sacks	D. C.	200 15th Street, S. E.
Calver, George W	D. C.	207 A Street, S. E.
Corbett, Lewell Munson	Va.	Arlington, Va.
Cram, Albert M	Vt.	1-2 Iowa Circle.
Eckhardt, John Carl	D. C.	1140 18th Street.
FitzHugh, William DeHart, Jr.	Pa.	Vienna, Va.
Fortier, Roy McLeay	D. C.	1723 Corcoran Street.
Gallion, John B	Okla.	Garfield Hospital.
Gallion, Thomas N	Okla.	Garfield Hospital.
Gray, Augustus Clagett	Md.	University Hospital.
Gray, Paul	D. C.	627 7th Street.
Hall, Custis Lee	D. C.	1408 Chapin Street.
Helfgott, Max Aaron	Russia	401 21st Street.
Helfgott, Nathan	Russia	401 21st Street.
Hankins, Harry Gordon	S. Africa	1210 12th St., N. W.
Hunter, Oscar Benwood	Va.	1305 22d Street.
Knott, Charles O	Va.	330 N. C. Ave., S. E.
Landis, Charles Caldwell	Cal.	
Luckett, George Sparr	D. C.	504 A Street, S. E.
Milburn, Frank Washington	Va.	Alexandria, Va.
Moore, Charles S	Mich.	2523 University Place.
Pagan, Albert Elwood	D. C.	1965 Biltmore Street.
Posey, Orlando J	D. C.	540 5th Street, S. E.
Read, Boyd Richard	D. C.	1819 N. Capitol Street.
Rollings, John Adolph	W. Va.	1143 22d Street.
Ruppert, Charles Christian	D. C.	611 K Street, N. W.
Scarito, Nicolo	Italy	1021 8th Street.
Schaub, Gustav Adolphus	Texas	1419 Chapin Street.
Shea, George Marvin White	D. C.	1502 P Street.
Sloat, Jesse Irving	D. C.	23 1st Street, N. E.
Travis, John Randolph	Va.	1234 Massachusetts Ave.

Second Year.

Name.	Legal residence.	City address.
Bacon, Walter Compton	D. C.	808 11th Street, N. E.
Bailey, William Otis	S. C.	1217 N Street.
Beauchamp, Ellis Franklin	Va.	1206 O Street.
Brewer, Gilbert Roscoe	Ill.	401 M Street, N. E.
Brock, Charles Le Roy	D. C.	1912 9th Street.
Burnett, Roy Edgar	Okla.	1221 O Street.
Castleman, Philip	Mass.	902 Westminster Street.
Cox, Clem	Va.	641 D Street, S. E.
Crane, Charles George	N. Y.	1221 O Street.
Dougherty, Bernard Joseph	N. Y.	1105 14th Street.
Downey, Alice Winans	D. C.	2473 18th Street.
Dyer, John Christopher	Ohio	310 10th St., N. E.
Eisenberg, Arthur Alexander	D. C.	1213 4½ Street, S. W.
Ellison, Everett Monroe	Tenn.	411 3d Street.
Eppard, George I.	Va.	1921 G Street.
Fisher, Charles Albert	Pa.	38 I Street, N. E.
Hayton, Charles Henry	S. Africa	Foreign Mission'y Seminary, Takoma Park.
Hunt, Isaac Burton	Tenn.	702 H Street.
Ingle, Ernest Wilfred	S. Africa	1210 12th Street.
Irmen, Felix Arnold	D. C.	212 Morgan Street.
Jaeger, Henry William	D. C.	15 4th Street, S. E.
Jewell, Benson Mundy	Ill.	623 19th Street.
Kemeys, William	D. C.	1633 29th Street.
Kress, Ora Hannah	D. C.	Takoma Park, D. C.
Leonard, George Ferree	N. C.	1305 H Street.
Marquez, Ramón Isaac Janer	Porto Rico	1024 17th Street.
Martin, Aaron Wise	N. C.	2040 I Street.
Molzahn, Albert John	Neb.	Methodist Home.
Mooers, Harold Alonzo	D. C.	Takoma Park, D. C.
Oliver, Harry Waterhouse	N. D.	2517 14th Street.
Parks, Anderson W.	Colo.	511 10th Street.
Pitt, Richard V.	Va.	816 18th Street.
Ralph, Charles Edward	Ill.	411 3d Street.
Read, Effie Alberta	Mass.	Dept. of Agriculture.
Rougeou, Charles Franklin	La.	1815 G Street, N. W.
Sharp, George Tarplit	D. C.	3101 Highland Ave.
Shoemaker, Ralph W.	D. C.	3116 P Street.
Sinclair, Lieth Llewellyn	D. C.	327 M Street, S. E.
Smith, Arthur C.	N. Y.	735 13th Street.
Zimmerman, Carl George	N. Y.	735 13th Street.

Third Year.

Name.	Legal residence.	City address.
Amoss, Harold Lindsay	Ky.	U. S. Dept. of Agric.
Andrews, Lawrin Lundy	Kans.	1327 N Street, N. W.
Beale, Kenneth Foster	Md.	831 7th Street.
Barrett, Park Mitchell	W. Va.	1102 L Street.
Davis, George von Pullinger	Pa.	1307 9th Street.
Duenner, Robert Henry	Tenn.	1700 15th Street.
Elliott, Leo Louis	N. Y.	G. Washington Un. Hos.
Fetzer, Lewis William	N. Y.	338 Adams Street, N. E.
Frey, John Paul	D. C.	1224 30th St., N. W.
Glennan, Kenneth Rayner	Md.	Chevy Chase, Md.
Goss, Audrey	Kans.	1443 Massachusetts Ave.
Herring, Katherine M.	Iowa	14th and Girard Sts.
Hoover, George W.	Okla.	U. S. Dept. of Agric.
Hornaday, Frank A.	D. C.	1310 N. C. Ave., N. E.
Huntington, William Henry	D. C.	2330 Massachusetts Ave.
Kerby, James Philip	D. C.	2606 L Street.
Kinner, Jesse Lee	N. Y.	
Klingerman, George E.	Pa.	1519 Kingman Place.
Lewis, Harry Samuel	D. C.	54 I Street.
Loop, Floyd Addison	Pa.	1519 Kingman Place.
McLoone, John Joseph	Pa.	717 H Street.
McMillan, Walter Alexis	S. C.	1317 F Street, N. W.
Machler, Francis Patrick	Ill.	1219 Q Street, N. W.
Marriott, William McKim	N. Y.	3221 Highland Ave.
Morian, Clarence	Pa.	
Nelson, Nesmith	D. C.	1737 1st Street.
Neville, James Alan	Nebr.	2517 14th St., N. W.
Paige, Wendell A. H.	Vt.	1506 Q Street.
Peyton, Harry Alexander	D. C.	Columbia Hospital.
Piburn, John Logan	Mo.	S. G. O. War Dept.
Price, Walter	D. C.	438 N. J. Ave., S. E.
Ross, Erwin Worth	N. C.	1700 15th Street, N. W.
Rozelle, Keith Kistler	N. C.	1324 I Street.
Scanlon, Franklin Taylor	W. Va.	1117 I Street, N. W.
Sorensen, Antone Christian	Utah	1115 I Street.
Tibbets, Albert Perkins	N. H.	1018 14th Street.
Titus, Elijah White	Va.	Children's Hospital.
Waller, Clifford E.	Ala.	Indian Office.
White, Lyle Charles	Ohio	The Stanhope.
Williams, Robert Cleveland	N. C.	1005 13th Street.
Young, Clifton E.	D. C.	2509 Wisconsin Ave.

Fourth Year.

Name.	Legal residence.	City address.
Bales, Ernest Norment	Cal.	637 E. Capitol Street.
Brooks, James Joseph Lester	D. C.	465 Florida Ave.
Chappell, Sidney Lovett	D. C.	3901 Grant Road.
Clark, Albert Patton	D. C.	1217 Harvard Street.
Collins, James Cleveland	D. C.	1437 S Street.
Conklin, Rush West	Md.	Hyattsville, Md.
Craft, Clarence Christian	S. C.	1116 10th Street, N. W.
Dunn, Abner Beebe	Pa.	G. Washington Un. Hos.
Fair, Charles Hardy	Va.	Providence Hospital.
Folkmar, Elenora C	Wis.	
French, Sanford Williams	N. Y.	The Majestic Apt.
Gouchenour, David Thomas	Va.	28 R Street, N. W.
Griffin, Clarence Herbert	Mass.	1538 17th St., N. W.
Habel, William Parker Herbst	Pa.	1819 Q Street.
Hastings, John Emery	N. Y.	3034 Cambridge Place.
Hoey, J. Joseph	R. I.	723 18th Street.
Jobson, William Russell	Pa.	823 19th Street.
Keneipp, Edgar P	Ill.	136 D Street, S. E.
Klugh, George Fred	S. C.	159 Randolph Place.
Lind, John Edward	Iowa	506 A Street, N. E.
McEnery, Douglas Wiltz	La.	1366 Kenyon Street.
McKnight, Frederick W	Ohio	612 22d Street.
McLaughlin, William Frank	Pa.	Emergency Hospital.
Mata, Carlos	Cen. Amer.	1208 M Street.
Micheloni, Louis Antony	Uruguay	P. O. Box 8.
Neail, Howard A	N. Y.	Casualty Hospital.
Pole, Samuel Boyce, Jr	D. C.	216 8th Street, N. E.
Powell, Robert Llewellyn	Va.	934 O Street.
Rhees, Benjamin Rush	D. C.	Stratford Hotel.
Simonton, Lawrence Joseph	Ind.	1855 Calvert Street.
Sisco, Henry N	D. C.	1344 Vermont Ave.
Sullivan, James Francis	R. I.	614 I Street.
Turnbull, Samuel Jay	Fla.	1110 New York Ave.
Vasenius, Frederick Walter	Finland	1210 12th Street.
Watson, John W	D. C.	201 Nichols Ave.
Watters, Benjamin Courtney	Md.	1013 H Street, N. W.
Weidemann, Clarence Conrad	D. C.	1237 Girard Street.
Weiler, George L	Utah	504 3d Street.
Weithas, Richard Charles	N. Y.	1005 13th Street.
White, Gershom Franklin	Ohio	The Brunswick.
Willis, John Mitchell	W. Va.	Sibley Hospital.
Wood, William Pleasant	Ohio	1013 H Street.

Special.

Name.	Legal residence.	City address.
Selehaddin, Mouhammed	Turkey	Takoma Park, D. C.

Summary.

Candidates for the M.D. Degree:

First year	32	
Second year	40	
Third year	41	
Fourth year	42	
Special	—	
		156

Degrees Conferred.

DEGREES CONFERRED AT COMMENCEMENT, 1908.
IN COURSE.

Doctor of Medicine.

Frederick Scott Avery, Michigan.
Clarence Sanborn Bossert, Wisconsin.
John Edson Bowers, Indiana.
Frank J. Brown, Iowa.
Andrew Johnson Browning, Maryland.
William Alvin Bryan, Iowa.
Benjamin Franklin Cliff, North Carolina.
Roy Franklin Dunmire, Pennsylvania.
Ernest Day Everett, Missouri.
A.B., 1899, Baker University.
Algernon Sydney Garnett, Virginia.
George Matthew Gehringer, Pennsylvania.
Thomas Everett Griffith, Pennsylvania.
George H. Hart, Pennsylvania.
V.M.D., 1903, University of Pennsylvania.
Arthur William Hewitt, Ohio.
Daniel Witter Higgins, Maryland.
John Wilson Hopkins, Minnesota.
Edmund Joseph Horgan, District of Columbia.
William Marion Irbysmith, Kentucky.
A.B., 1901, A.M., 1901, Georgetown College, Kentucky.
Charles Solomon Lawrence, North Carolina.
John Ramsey Littlefield, District of Columbia.
Robert Stanley MacKnight, Michigan.
Maurice Hopkins Maxwell, Maryland.
Herman Emil Molzahn, Minnesota.
John Sweyn Neate, District of Columbia.
Edward Rogers Noyes, District of Columbia.
Harry Alfred Ong, Ohio.
Orra Edgar Patterson, Illinois.
Herbert Samuel Pyne, Utah.
Ralph Andre Quick, Virginia.
Riley Russell, Illinois.

William Bertram Scott, Oregon.
B.Lit., 1896, B.S., 1906, Willammette University.
John Wesley Sherwood, Maryland.
Harry Emmerich Simons, District of Columbia.
Ernest Wellington Smith, West Virginia.
Harry Marbury Tayloe, Virginia.
Edward Taylor, Alabama.
B.S., in Phar., 1903, Alabama Polytechnic Institute.
William Davis Tewksbury, Colorado.
Lewis Royer Thompson, Pennsylvania.
A.B., 1900, Ursinus College.
Frederick Clarence Weber, Ohio.
B.S., Ohio State University.
Frederick Gordon Whamond, Illinois.
Charles Wheatley, Maryland.
Arthur Joseph Wheeler, Illinois.
Joseph Victor Wilhelm, Illinois.
James Thruston Wolfe, Virginia.
Rowland Daniel Wolfe, Maryland.

DEGREES CONFERRED AT FALL CONVOCATION, 1908.
IN COURSE.

Doctor of Medicine.

Ezra McKnight Davis, South Carolina.
William Joshua Groot Thomas, District of Columbia.

DEGREES CONFERRED AT COMMENCEMENT, 1909.
IN COURSE.

Doctor of Medicine.

James Joseph Lester Brooks, Pennsylvania.
Sidney Lovett Chappell, District of Columbia.
Albert Patton Clark, District of Columbia.
Phar.D., 1905, National College of Pharmacy.
James Cleveland Collins, Virginia.
Rush West Conklin, Kansas.
Clarence Christian Craft, South Carolina.
B.S., 1902, South Carolina Military Academy.
Charles Hardy Fair, Virginia.
Sanford Williams French, New York.
David Thomas Gochenour, Virginia.
B.S., 1900, Bridgewater College.
Clarence Herbert Griffin, Massachusetts.
B.S., 1904, Massachusetts Agricultural College.
William Parker Herbst Habel, Pennsylvania.
Phar.D., 1905, National College of Pharmacy.
John Emery Hastings, New York.
John Joseph Hoey, Rhode Island.
William Russell Jobson, Pennsylvania.
Edgar Percy Keneipp, Illinois.
George Fred Klugh, South Carolina.
B.S., 1901, Clemson Agricultural College.
John Edward Lind, District of Columbia.
Douglas Wiltz McEnery, Louisiana.
B.A., 1903, Tulane University.
Frederick W. McKnight, Ohio.
William Frank McLaughlin, Pennsylvania.
Howard William Neail, New York.
Samuel Boyce Pole, Jr., District of Columbia.
Robert Llewellyn Powell, Virginia.
Benjamin Rush Rhees, District of Columbia.
Laurence Joseph Simonton, Indiana.

Henry Nathaniel Sisco, District of Columbia.
A.B., 1898, Battle Creek College.
Samuel Jay Turnbull, Florida.
Frederick Walter Vasenius, Finland.
George Leo Weiler, Utah.
Richard Charles Weithas, New York.
Gershom Franklin White, Ohio.
B.S., 1901, Ohio University.
Ph.D., 1905, Cornell University.
John Mitchell Willis, West Virginia.
William Pleasant Wood, Ohio.

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